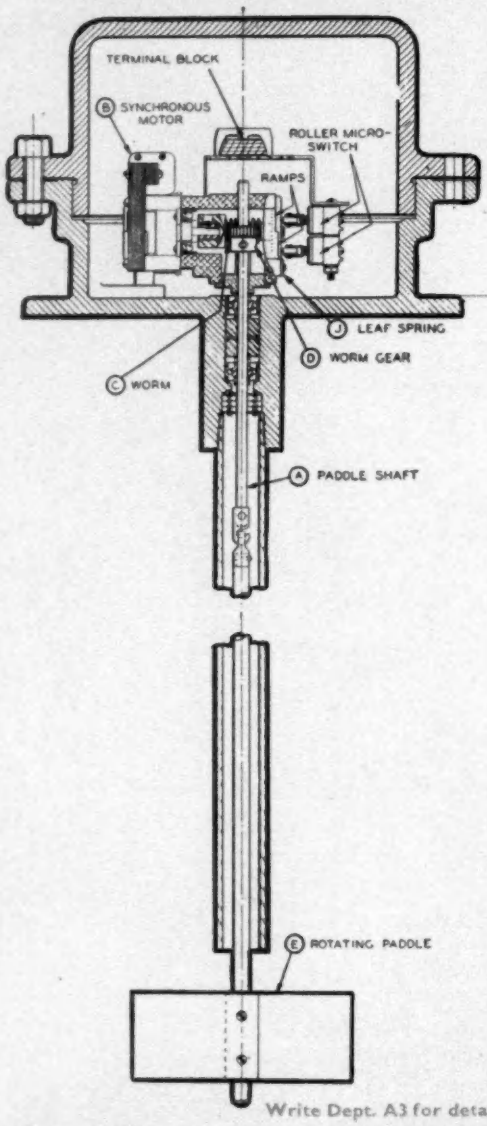
Chemical Age

incorporating

PETROCHEMICALS and POLYMERS

VOL. 86 No. 2203 30 SEPTEMBER 1961

Controlled Flow



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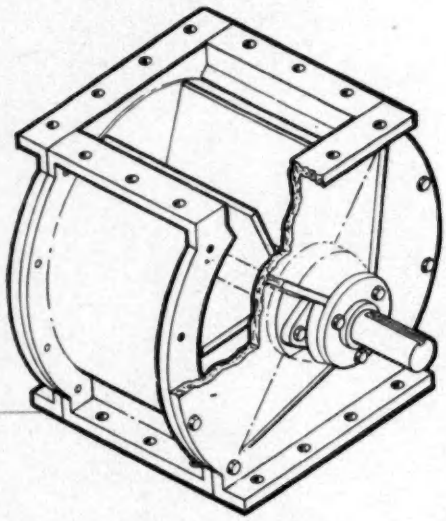

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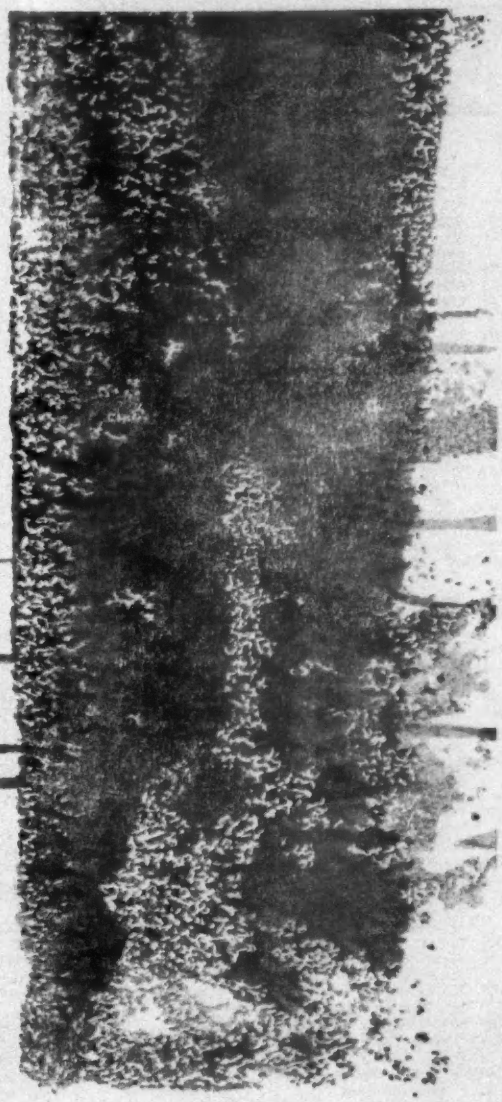

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60/27

INDEX TO ADVERTISERS

The first figures refer to advertisements in **Chemical Age Directory & Who's Who,** *the second to the current issue*

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INDEX TO ADVERTISERS

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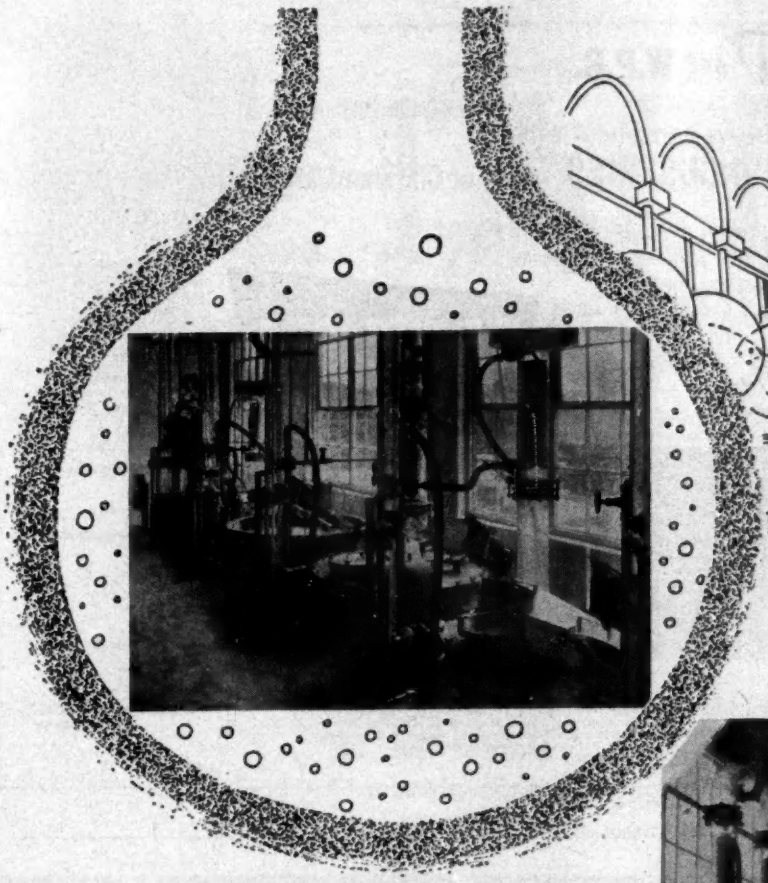

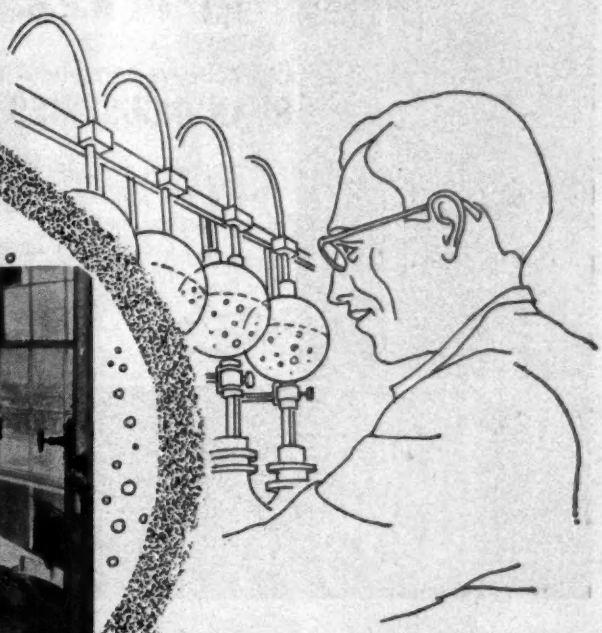

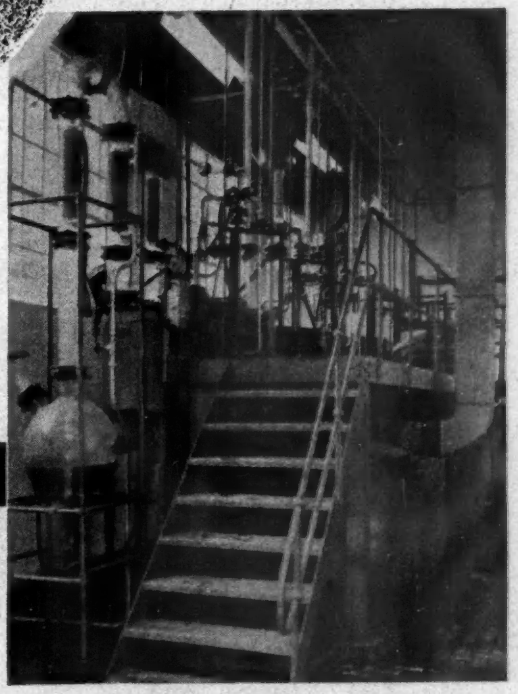

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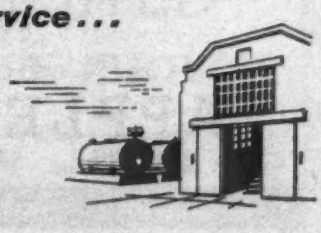

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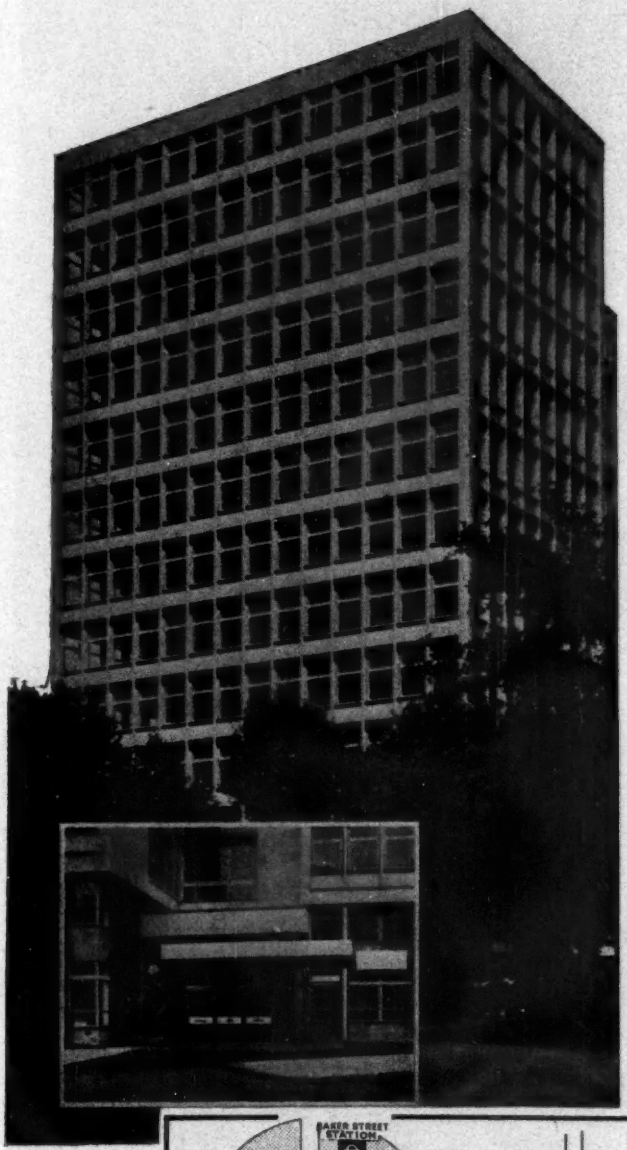

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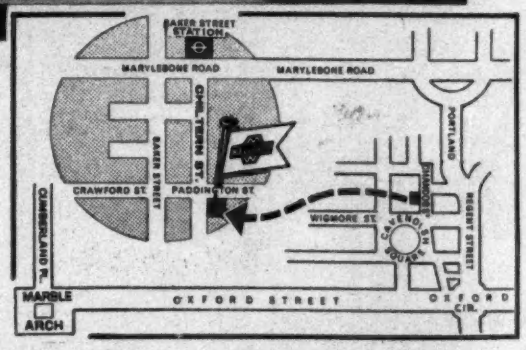

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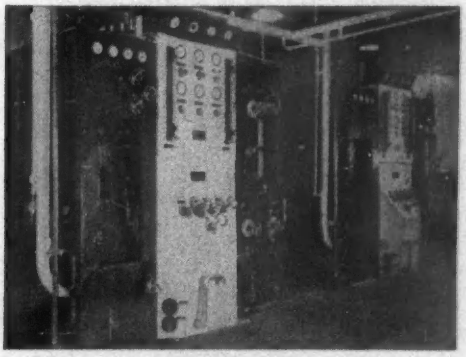
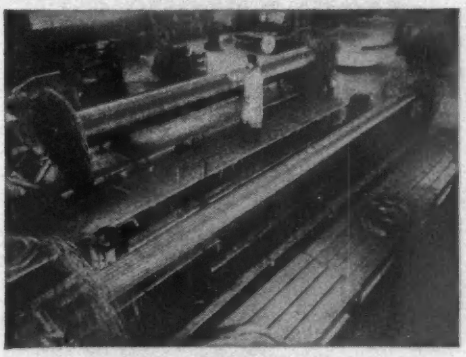
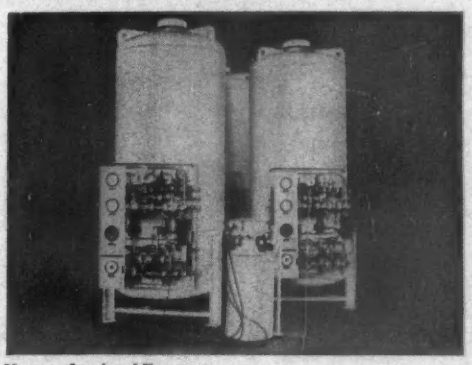


Liquid Oxygen Plants at the Argon Purification Plant, UKAEA, Dounreay



Cross Flow Heat Exchangers



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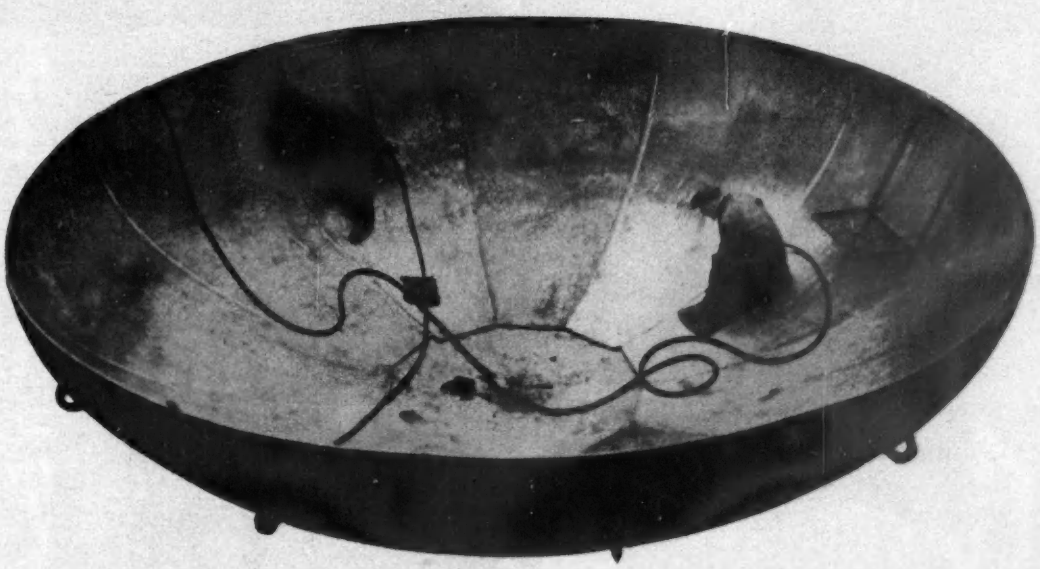

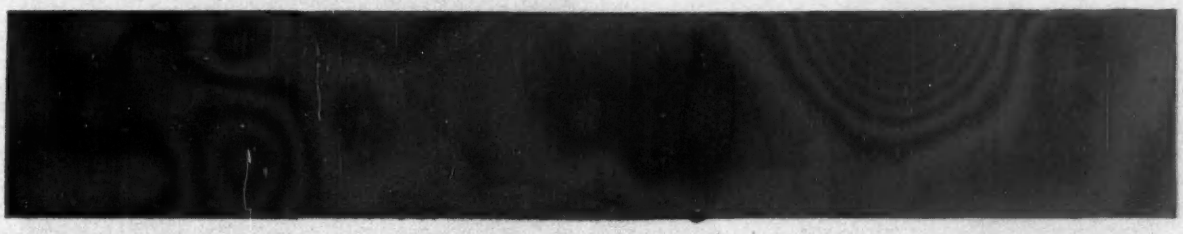

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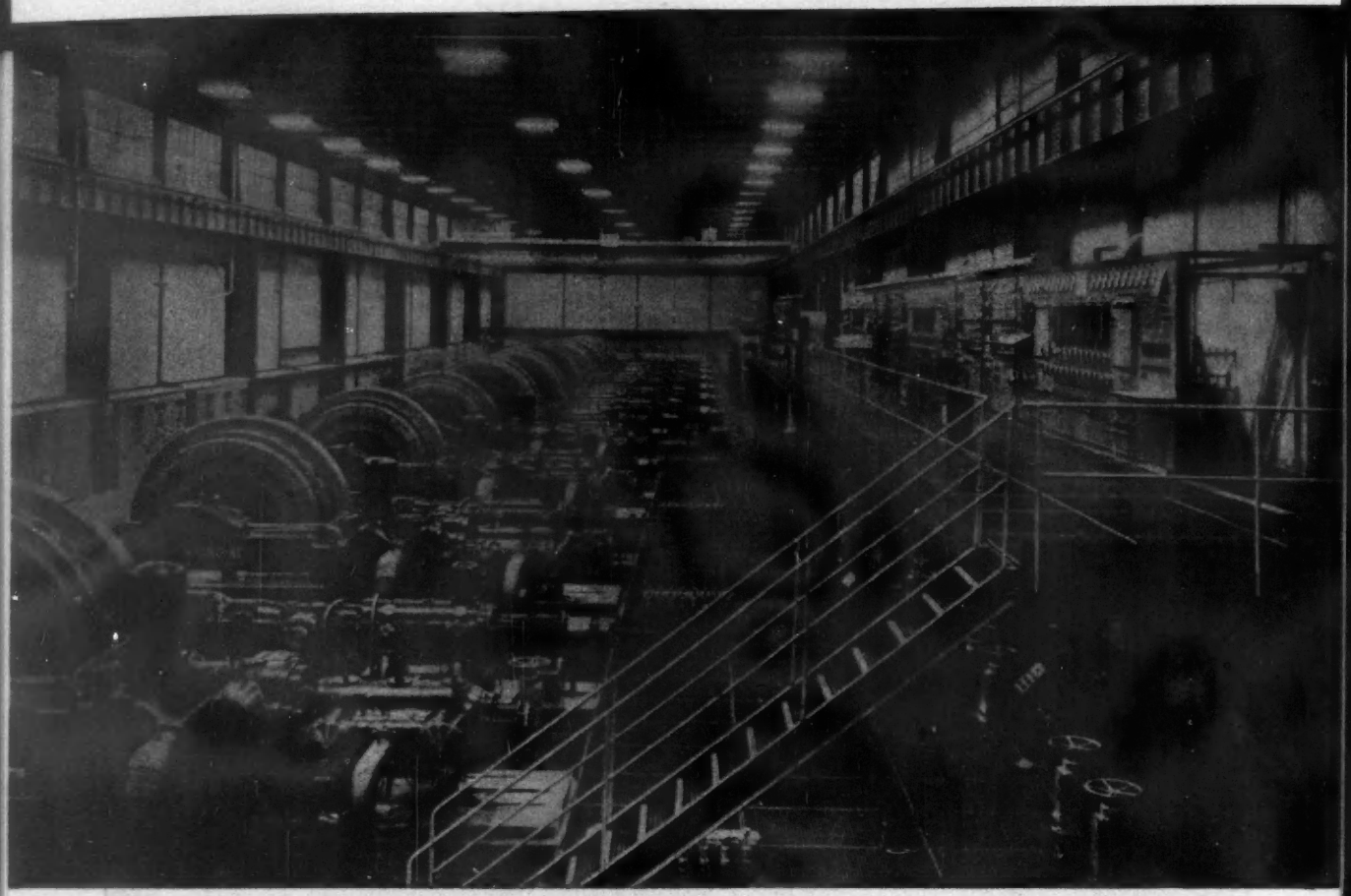

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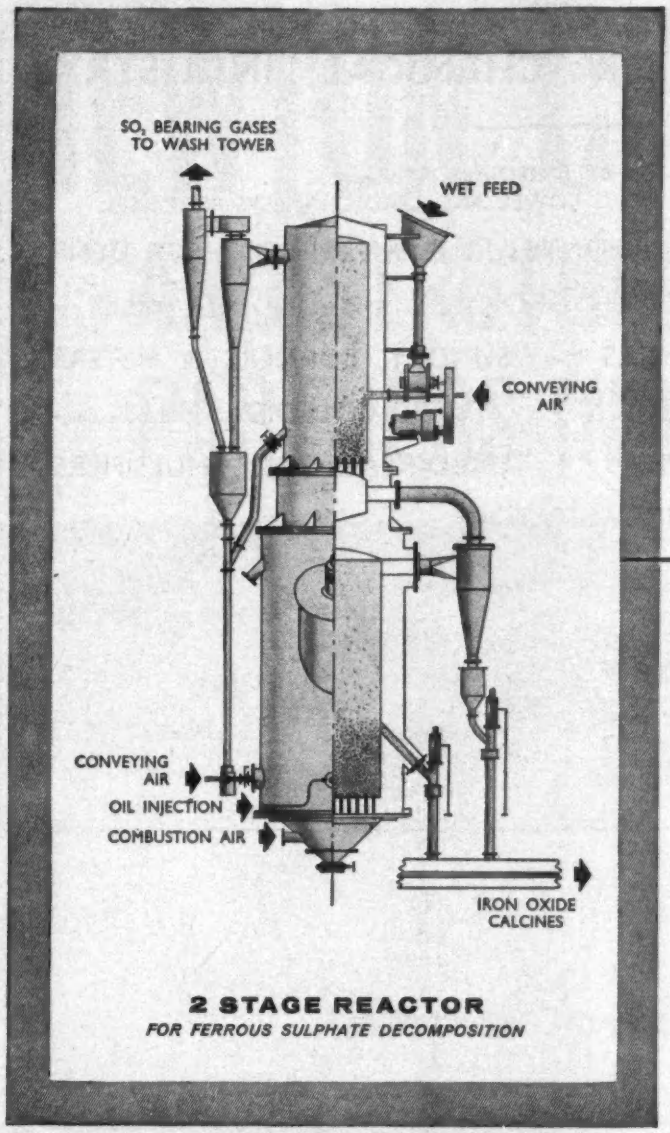

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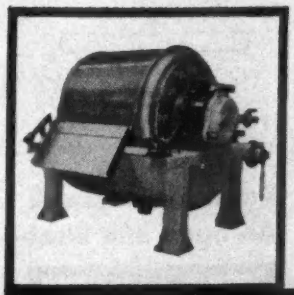

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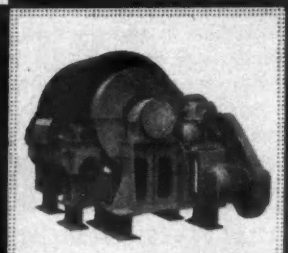

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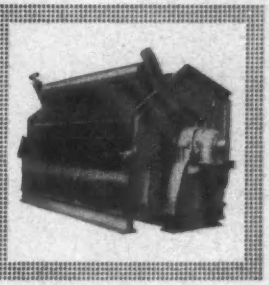

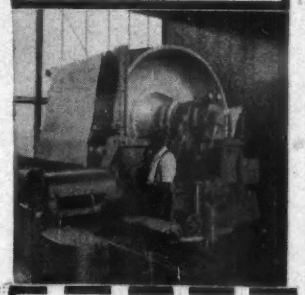

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You are invited to write for full information about the Allis-Chalmers Screens available for *your* industry.

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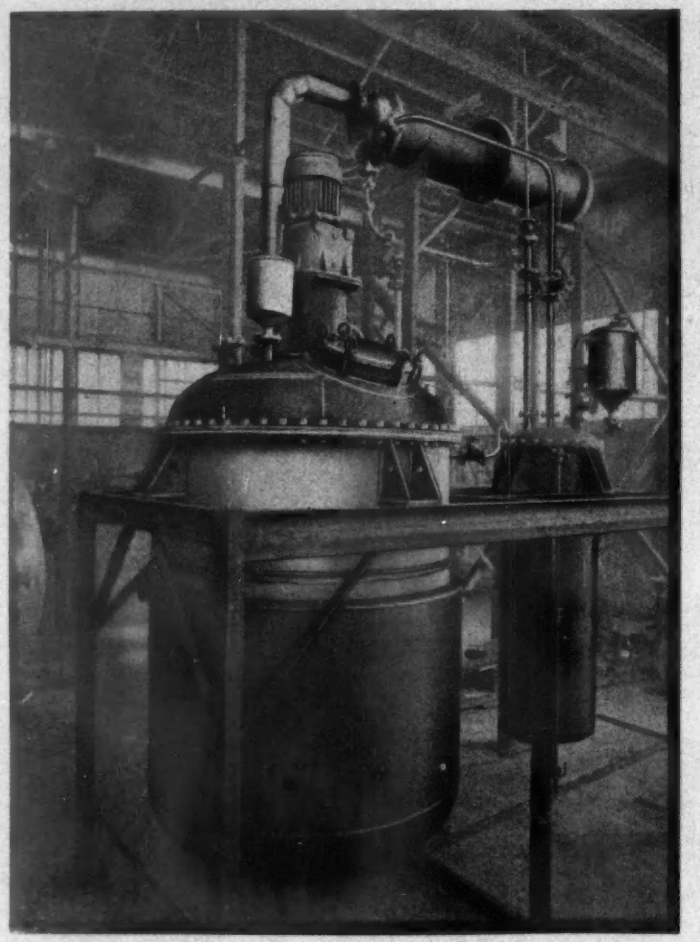
B RESIN PLANT



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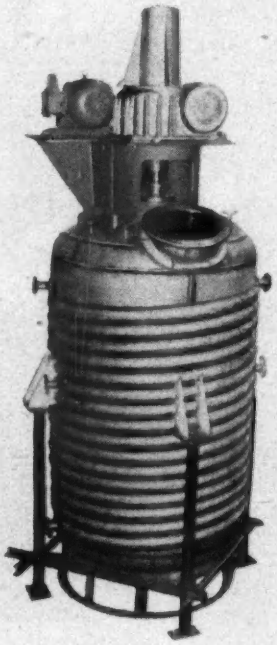

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VOL. 86 No. 2203
SEPTEMBER 30 1961

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F

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CONFIDENCE IN CHEMICALS

ALTHOUGH the 1960s have got off to a bad start so far as chemical industry profits are concerned, there can be no doubt that the British producers view the future with great confidence. This is clearly shown in the special CHEMICAL AGE survey of new U.K. projects that is featured in pages 497 to 507.

Nearly 280 projects are listed here and these include many new plants and expansion schemes not previously announced. A similar survey published a year ago covered 100 fewer projects, which were constructively estimated to involve a total expenditure of between £190 million and £200 million. A similar estimate and equally conservative made of the projects in the current survey reveals a figure of between £280 million and £300 million.

This figure takes into account the actual project cost which is quoted in 55 instances, totalling over £140 million. In 220 cases, no cost is announced and this is estimated on the basis of capacity (where known), nature of the project and knowledge of the cost of constructing similar plant. The estimate of £280 million to £300 million covers plants completed since publication of the last CHEMICAL AGE survey, projects in hand and those that have been announced for future construction.

Several £ multi million plants have been disclosed during 1960, including the nylon-6 projects of British Enkalon, Courtaulds and I.C.I.; Fisons' nitrogen complex; Du Pont's toluene di-isocyanates facility, etc. In addition, all the major producers are currently working on projects in this category. Shell are building the first U.K. polydiene plant as well as a large polyolefins installation; Esso are building their butyl rubber unit at Fawley, while Distillers, who will shortly announce large-scale production of synthetic rubber by an improved process, either themselves or with associates have major projects in hand at Baglan Bay, Hull and in South Wales.

The estimated cost of plants covered by the survey does not include the whole of the £100 million which I.C.I. are to spend at Severnside, only those plants so far scheduled for construction—ammonia, ethylene oxide and caprolactam. A total of 50 plants are listed for I.C.I. and for 11 of those projects cost figures have been issued—totalling more than £35 million. The remaining 39 plants include several £ multi-million projects and their cost can be estimated at about £50 million or more.

Earlier this week, the national newspapers were full of gloomy predictions about I.C.I.'s half-year profits which became available after CHEMICAL AGE went to press. On Tuesday, the *Daily Mail* was suggesting that there is now too much chemical capacity; that the chemical boom is over for the time being. This is nonsense; the industry is suffering from the squeeze on profits, but not so badly as some industries.

As for the boom having ended, the chemical industry can expect sales to continue mounting, particularly if Britain's entry to the Common Market is speedily effected. The jeremiahs may talk of over-capacity, but the chemical industry can only thrive by building plant for new products and by anticipating future market build-up in demand for existing materials.

(*Continued on page 490*)

BERK'S NEW DRUG COMPANY PLANS PLANT FACILITIES

A NEW wholly-owned subsidiary to consolidate and develop their pharmaceutical interests has been set up by F. W. Berk and Co. Ltd., Berk House, 8 Baker Street, London W.1, under the title of Berk Pharmaceuticals Ltd. From 2 October, this new company will take over the trading of Leda Pharmaceuticals Ltd. and the staff absorbed. Leda, another Berk subsidiary, market a range of pharmaceutical products.

A pharmaceutical processing plant will in due course be constructed, probably in the Home Counties, and business eventually handled from the new location.

In the meantime a distribution centre is being established at Berk House and both Leda and Berk Pharmaceutical products will be distributed from that address after 2 October. Bulk storage will continue at the Edmonton establishment of F. W. Berk, while research and development will continue to be based on the Sandridge Laboratories.

A number of new pharmaceutical products have been clinically investigated during the past year and the new organisation intends to increase considerably its range.

Already two new products for prescription sale are being introduced by Berk in October. The first, Asilone, is a tablet containing 0.250 gr. of a polymethylsiloxane for the treatment of intestinal distension, heartburn and medicamental gastritis. The second, Acridile, is an enteric coated tablet of cysteine methyl ester hydrochloride for the treatment of chronic bronchitis and other respiratory tract conditions.

South African Dumping Duty on Filter Cloth

The South African dumping duty on filter cloths when originating from the U.K. and Northern Ireland has been amended to cover filter cloths, discs and papers, cut to size or shape, but excluding papers less than 12 in. sq. or 12 in. diameter and filter papers for chromatographic use.

Chemico Awarded Trombay Fertiliser Contracts Worth Nearly £20 M.

GOOD progress has been made with preparatory work in connection with the Trombay fertiliser project near Bombay. This third large-scale fertiliser complex is being set up by the Government under the supervision and control of the Fertiliser Corporation of India. Contract for the supply of equipment and machinery for three plants—ammonia, urea and nitric acid—has been awarded to Chemical Construction Co., New York, at a total cost of $19.7 million.

Tenders for a nitro-phosphate plant are under consideration, while those for the fifth major plant, for sulphuric acid, have been issued. All ancillary plants and services and installations are being planned, designed and executed by the corporation's technical staff.

The U.S. Development Loan Fund is making a loan of $30 million to meet the foreign exchange requirements, while the U.S. International Co-operation Administration is lending the rupee equivalent of $28 m. to meet local costs.

The Trombay complex will use 50,000 tons of gas/year from the Burmah-Shell refinery and 45,000 tons/year of naphtha from Stanvac to produce 90,000 tons/year nitrogen, 97,500 tons of urea (46% N) and 254,000 tons/year of nitro-phosphate compound. The Koyna power station will supply 35,000 kW of power.

London Section R.I.C. Annual Dinner

Annual dinner of the London Section, Royal Institute of Chemistry, will be held at the Waldorf Hotel, Aldwych, London, W.C.2, on 27 October at 7.15 p.m. Chief guests will be Dr. and Mrs. A. Clow and Sir William Slater, R.I.C. president. Tickets price 37s 6d each, are obtainable from Mr. P. F. Corbett, Shell-Mex and B.P. Ltd., 1 Kingsway, London W.C.2.

Will

Mr. George Nicholas, founder of Aspro Nicholas, who died a year ago at the age of 76, left an estate worth £A2,120,719. Mr. Nicholas was the co-discoverer of the Aspro formula in 1915.

Sterilisation of Glasshouse Soil

'Off to a Clean Start' is a new colour film on glasshouse soil sterilisation production by the Horticultural Division of Pan Britannica Industries Ltd. The film shows the use of Steriform (formaldehyde) Sterisol, DD (dichloropropane dichloropropylene), carbon disulphide, Chloropicrin and Vapam—the most commonly used chemical sterilisers.

Hatfield Sub-section Proposed for London R.I.C.

Formation of a Sub-committee for the London Section, Royal Institute of Chemistry, is under consideration by the section committee.

Lurgi Plants Are No Alternative to Methane

QUESTIONED in London on Monday, Sir Henry Jones, Gas Council chairman, said he did not regard large-scale Lurgi plants as an alternative to imported methane. He was replying to suggestions that the Government might delay a decision on imports of Saharan natural gas until the outcome of the study of Lurgi plants is known. This study, as revealed in CHEMICAL AGE last week, is being undertaken at three sites in the East Midlands.

Sir Henry said he would be very disappointed if the Government did not approve the plan to import liquid methane from the Sahara. But if the answer were 'No,' he would not 'pack up.' He would say "What is the next best thing we could do?"

The Gas Council's proposals to import methane were presented to the Minister of Power some months ago, since when additional information has been supplied. A reply is still awaited. It is planned to distribute imported methane to seven area boards. It might meet about 10 or 12% of the country's present gas needs.

Weir to Make Pacific Pumps in U.K.

UNDER an agreement which came into effect on 12 August, G. and J. Weir Ltd., Cathcart, Glasgow, take up a licence to manufacture and market in the U.K. the products of Pacific Pumps Inc., a division of Dresser Industries Inc., of Los Angeles, California, U.S. The Pacific range of pumps cover a wide variety of applications in the petroleum, petrochemical and allied industries and are claimed to be already well established in the U.K.

Selling arrangements for Weir-Pacific pumps will be handled by existing staff at the branch offices and at the Weir headquarters at Cathcart, but in the London area Mr. Gavin R. Murison, formerly manager of the Weir Birmingham office, takes over Weir-Pacific sales from the Weir office at 37 Mincing Lane, E.C.3.

Confidence in Chemicals

(*Continued from page 489*)

Over-capacities are temporary and are on a much lower scale in this country than in the U.S.; in most cases, they can safely be regarded as an indication of under-consumption. Salesmanship, technical service, applicational development and doubtless a further round of price cuts for some products will overcome this hurdle.

The answer to the prophets of gloom lies not in this year's profits, but in increasing sales and in the vigorous chemical industry expansion programme reflected in the pages of our survey.

Project News

Marchon's Sulphamic Acid Plant Now in Bulk Production

FIRST U.K. plant for the bulk production of sulphamic acid is on stream at the Whitehaven plant of **Marchon Products Ltd.**, one of the Albright and Wilson Group. The material is being supplied by **Albright and Wilson (Mfg.) Ltd.** Marchon themselves designed and built this plant and are using SO_2 from their anhydrite kilns on the same site for the production of the sulphamic acid.

As the only crystalline strong acid in existence, sulphamic acid is said to have many advantages over liquid acids, while retaining all the essential properties. Its most important advantages are the ease with which it may be transported and stored; the absence of vapour, even when heated, and safety in handling.

Sulphamic acid has many and varied uses in a wide range of industries, being particularly valuable in dyeing processes for textiles and leather and as a universal cleaner and descaler of metals. As stated in CHEMICAL AGE, 26 November 1960, p. 893, boiler descaling provides the largest U.K. demand for sulphamic acid and takes about 500 tons/year.

In addition to the home trade, there is a large market for sulphamic acid overseas, where its ease of transport and handling is a great asset.

New Nitric Acid Plant for I.C.I. Heysham

● SUBJECT to local planning permission, **I.C.I. Billingham Division** will start construction in October on a new nitric acid plant at Heysham. The project has been approved by the I.C.I. main board and the new plant will be built on a site adjoining that of the nitric acid plant built three years ago. The new unit will play an important part in the division's development plans for Nitrochalk 21 fertiliser, the production of which is expected to be substantially increased.

Fisons Fertiliser Contract for McKee H.W.

● CONTRACT for the detail design, supply and erection of a new compound fertiliser granulating plant at the Cliff Quay Works, Ipswich, of **Fisons Fertilizers Ltd.**, has been awarded to **McKee Head Wrightson Ltd.**, London. No further details are available of this project for the time being.

The CHEMICAL AGE survey of new plant projects (see p. 497) discloses for the first time that one of the major products of the new Fisons nitrogen complex at Milford Haven will be ammonium nitrate. This plant will employ 200 people and construction will start early in 1962 for completion in 1964. For the joint Fisons-Esso ammonia plant at Fawley Milford Haven, a new company, **Milford Haven Ammonia Co.** has been set up on a 50-50 basis. The plant will occupy a 5-acre site and will produce 150,000 tons/year of anhydrous ammonia. With a work force of 50, the plant will be managed by Esso. Construction will also start early next year but is due for completion in 1963.

£100,000 Fat-splitting Plant for Price's

● SHORTLY to be installed at **Price's (Bromborough) Ltd.**, the Merseyside oleochemical producers, is a Colgate-Emery continuous fat-splitting plant manufactured for them under licence by **Blaw Knox (Chemical Engineering) Ltd.**, London.

Key to this plant is the continuous splitting column made entirely of stainless steel and standing 70 ft. high. It works at a pressure of 650 p.s.i. and will deal with 3,000 lb. of fat an hour. Cost of the completed installation will exceed £100,000. This plant will supplement the company's existing battery of high-pressure autoclaves which are currently splitting glycerine from fatty acids.

A.E.I. Control Equipment for Soviet Detergent Plants

● ORDER for 18 control centres, valued at about £70,000, has been obtained by the Motor and Control Gear Division of **Associated Electrical Industries Ltd.**, from Constructors John Brown Ltd.

The equipment will be used to control the electric motors in two projected Russian detergent plants, one at Volgadonsk and the other at Shebekino. Details of these two projects, for which C.J.B. are to provide design, equipment and commissioning services in association with Marchon Products Ltd., who are supplying know-how, have been given in previous issues of CHEMICAL AGE.

Du Pont Introduce New Vinyl Resin

CLAIMED to impart toughness, flexibility and adhesion to paraffin wax and other low molecular weight materials, Elvax vinyl resin is being introduced on the European market by the Agricultural and Industrial Chemicals Department of Du Pont de Nemours International S.A. of Genoa, Switzerland. This new product, which will initially be available in limited quantities, is expected to increase the use of wax in the paper, packaging, adhesive, and other wax using industries, and is also expected to enable the wax industry to compete more effectively with the newer flexible films and coatings in a wide range of uses.

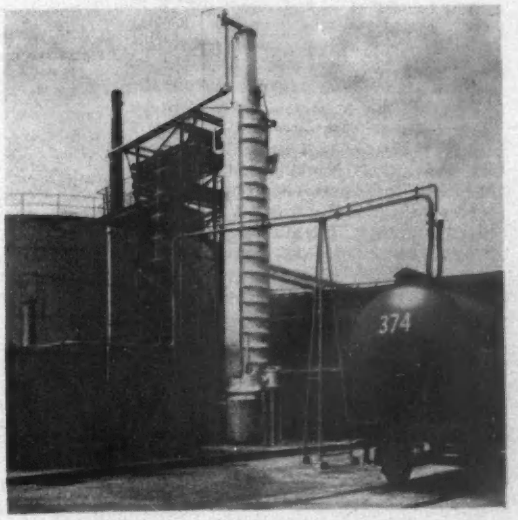
Elvax is a multi-purpose copolymer of etbylene and vinyl acetate and is compatible in all proportions with ordinary paraffin wax. It can be used as an additive or modifier to improve wax coatings, or can be extended with paraffin wax to yield low-cost, easily applied polymer type coatings.

New Factory for British Oxygen

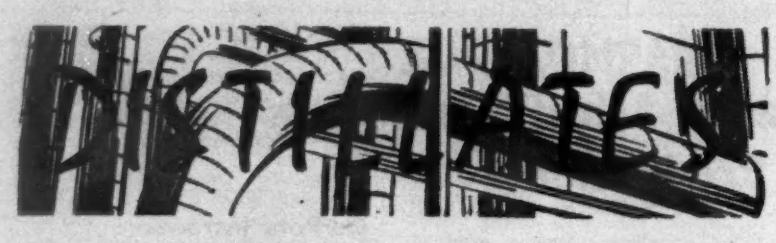
British Oxygen have agreed with the Board of Trade to lease a site near Dumbarton on which to establish progressively a new light engineering factory, while leaving the oxygen plant manufacturing at the existing Edmonton Works.

It is estimated that over two years will elapse before the first stage of the new factory is established. Thereafter, there will be a gradual build-up to a total strength of about 2,000 during the following three or four years.

Simon-Carves Ammonia Liquor Plant at Southampton



Ammoniacal liquor concentration plant by Simon-Carves at the Southampton gas works of the Southern Gas Board. This plant extension can treat 750 gall./hr. of crude ammoniacal liquor



★ For some time chemical circles have been discussing persistent rumours that the Government intend to introduce a policy of strict industrial planning. It now appears that the scheme, said to command support of most Cabinet Ministers, will go beyond what the Chancellor of the Exchequer originally had in mind. Once the Government was set on the road towards planning it was, I suppose, inevitable that they would find it logical to pursue the matter to the utmost.

There can be no doubt that the scheme proposed, details of which have yet to be revealed, would make nonsense of private enterprise. I gather that the chemical industry is believed to figure high in the proposals for a planned economy, which many feel will now be along the lines adopted in France.

A planned chemical economy could mean that development plans would have to be submitted for approval. It would probably be unlikely that a number of expansions in one particular field—say p.v.c. or polythene—would be approved. Planning along these lines would involve market research on the part of a central planning commission to say by how much capacity would be increased and, presumably, the slice of higher production to be allotted to each company. There are far too many aspects for me to consider here, but my feeling is that planning would be anathema to a strong, virile, competitive chemical industry.

★ One of Britain's spectacular chemical projects—I.C.I.'s £100 million scheme to develop a petrochemical and plastics complex at Rotterdam over a 10 year period—is not included in our annual survey of chemical projects (see p. 497). This is not because C.A. subscribes to the view—held by many in the City—that this project is likely to prove a non-starter. Reason for this view is twofold. Firstly, that Britain's proposed entry into the Common Market nullifies the need for plants based on the Continent and secondly, that it will be axed under the new Treasury policy of refusing foreign exchange permission for the setting up of plants on the Continent.

The first point was adequately answered by I.C.I. when they announced their plans. The scheme makes sense whether or not Britain enters the Common Market for it takes the company that much nearer the major sales outlets of Europe and cuts transport costs. After all, since the Treaty of Rome came into being many Common Market chemical giants have invested in other C.M. countries.

I do not think the I.C.I. scheme will come under the Chancellor's axe because it has already been approved in principle; the first project, that for acrylic sheet and Diakon moulding powders, is already in hand. In any event, under this investment freeze policy those chemical companies which have had the foresight to join forces with Continental producers in joint ventures—and they are regrettfully few in number—are to be congratulated. In due course they should earn handsome dividends.

★ Liberalisation of benzene imports in July has led to a lowering of prices in Japan to the current level of 50 to 53 yen per kg., from 60 yen. This compares with imported U.S. material selling as low as 40 yen/kg., but the Japanese price is expected to drop even lower before the end of this year.

Japanese prices of toluene and xylene are lower than the international level, but owing to shortage of stocks, prices are tending to rise. These materials are currently quoted at 25 yen for toluene and 26 yen for xylene. Because of unexpected home demand for use in paint production, Maruzen Oil Co. have signed a contract to import between 20,000 to 30,000 tons of *p*-xylene for terephthalic acid production.

Mitsui Petrochemical are seeking permission to introduce the Henkel process for the production of terephthalic acid starting from toluene. This route is said to be superior to U.O.P.'s Hydler process because it provides for the recovery of benzene. It is also said to have a price edge on the S.D. process and even with toluene priced at 30 yen/kg., it leads to cheaper benzoic acid and terephthalic acid. Under the Henkel solventless process, benzoic acid is synthesised by air oxidation in a liquid phase reaction.

★ The unprecedented analytical problems met in the field of nuclear technology have necessitated the development of new and modified techniques that cannot fail to be of value in all branches of analysis. The meeting of the Society for Analytical Chemistry to be held on 5 and 6 October at the Institution of Mechanical Engineers, Birdcage Walk, London S.W.1, is not intended primarily for workers in nuclear technology (although they will find it of interest), but rather for the much wider audience who should almost certainly find that the methods described can be utilised in a broader context.

Complexometry, emission spectrography, coulometry, conductimetry, chromatography, vacuum fusion, isotope dilution and scintillation counting methods all have applications outside nuclear technology. Papers on these subjects will be presented by experts.

All are welcome at this meeting. Arrangements for refreshments can be made provided the assistant secretary, S.A.C., 14 Belgrave Square, London S.W.1 (Belgravia 3258) is notified at once, and in any case not later than Tuesday, 3 October.

★ A recent addition in the useful series of publications on the Soviet-bloc chemical industry issued by Joseph Crosfield and Sons, of Warrington, deals with the location of the U.S.S.R. oils and fats industry. This report has been translated by Mr. G. W. Hemy, a Crosfield director.

In Tzarist Russia, oil processing was mainly located in oil producing areas and was characterised by small mills using local materials and by large works serving a wider area. Changes made in Soviet times have greatly affected the location of the industry and in areas where the oilseed crushing industry is strong, production units embrace milling, hydrogenation and margarine or soap production.

Biggest change has been the introduction of large-scale production which now accounts for 95% of the total, compared with 1913 when the bulk units produced less than 60% of total output.

★ It's an ill-wind that blows nobody any good and this year's wet summer should have meant higher sales for the Maryhill works of I.C.I.'s Nobel Division. Main task of this factory is to produce chemicals that keep rain at bay—aluminium acetate, aluminium formate, aluminium stearate, copper stearate and copper formate. All are used for heavy waterproofing, notably of large tents, tarpaulins for road transport and protective sheeting for farm machinery.

If a year's output were used to proof a fabric, it would provide an awning 30 miles wide between Glasgow and London. As the division's house journal *Nobel Times* notes, such an awning would have been welcome in July and August.

While this works profits from the wet, I.C.I.'s Billingham Division with its large-scale Drikold production for the soft drinks trade must have been wondering what has happened to that old-fashioned institution, the heat-wave. But fortunately for the chemical industry, soft drinks and ice cream are no longer the seasonal trade they were—ice cream is even becoming part of the traditional Christmas fare.

Alembic

Chief Factory Inspector's Report

Fewer Chemical Industry Accidents in 1960, But 10 More Deaths

A BAD year for industrial safety was how the Chief Inspector of Factories described 1960 in his annual report for the year (H.M.S.O., 7s). For the second year in succession there was a rise in the number of accidents reported. The total of 190,266 was 9% above that of 1959 and was the highest for 10 years. The rise in accidents to young people was particularly serious.

The increase has been spread over a wide range of industries and must be associated with a further considerable rise in the number of people employed. It is estimated that the average number of workers subject to the Factories Acts in 1960 was a little over 4% more than in the previous year, but much of the explanation of the rise of accidents is almost certainly to be sought in the higher level of industrial activity. After a period of relative stability, production increased rapidly in mid-1959 and continued to increase until it was checked in mid-1960. The average level of the Index for Manufacturing Industries for 1960 was 123 (1954 = 100) as against 114 for 1959, an increase of 8%.

Chemical Accidents

The number of accidents occurring in the chemical industries was 9,909 of which 48 were fatal (10,036 and 38 in 1959). As might have been expected the greatest number of fatalities occurred in the explosives (12) and in the coal gas (10) industries. The chemical industries recorded the highest rate of fatal accidents (4.3 per 1,000) of all factory processes, equalled only by the shipbuilding industry.

Of the accidents reported in the chemical industries, the highest proportion (1,918) occurred to the hand and wrist alone, followed by injuries to the ankle and foot alone (1,745). The highest rate of accidents (22 per 1,000 persons employed) within the chemical industry occurred in the vegetable and animal oils, fats, soaps and detergents industries, followed by 19 in the chemicals and dyes industries.

The 151 dangerous occurrences in the chemical industries resulted in 29 accidents and 10 fatalities, the highest number of deaths from dangerous occurrences in all industries. There were, however, more such occurrences in metal processing and general engineering industries.

The Chief Inspector referred to the particular hazards involved in recent rapidly developing processes in the chemical industry. He pointed out the importance of avoiding contamination of the operators' clothing by alkyls used in the manufacture of polymerisation catalysts, in view of the spontaneously flammable nature of the lower compounds and of the explosive decomposition aluminium alkyls undergo in contact with water.

The danger of fire from expanded plastics, which with the exception of p.v.c. present a fairly high fire hazard in their finished form, was also given some attention. Their flammability can be reduced by several means, including the incorporation of chlorinated monomers in the parent polymer, the use of chlorinated organo-phosphates as plasticisers or of non-flammable inorganic salts which may be incorporated or used as a surface treatment. Where foamed plastics are used, care must be taken to prevent contamination with other materials liable to spontaneous ignition.

Two serious illustrations underlined the great care required when dealing with compounds used in the manufacture of pesticides, fungicides and seed dressings. In one incident a man was seriously poisoned by airborne mercury while making organic mercury compounds. The concentration of mercury in the air was found to greatly exceed the recommended maximum permissible concentration for organic mercury compounds. Experience has shown that reliance cannot be placed on the use of respirators and protective clothing. Routine investigation of the amount of contaminant in the air is vital. The second incident—the death of a worker when organic phosphorus insecticide was apparently discharged on to his clothing during the baling of the drums which had contained the liquid—indicates the need for clear and suitable marking of drums to indicate their contents and relevant hazards and precautions, and thorough decontamination and safe disposal of empty containers.

Investigations into methods of applying seed dressings have shown that it is possible to design machines to apply dressing in safety. Over-riding consideration is the maintenance of scrupulous cleanliness at all times and the avoidance of spillage.

Dealing with the handling of chemicals, the Chief Inspector pointed out the necessity of planning and enforcing a method for storing and handling containers, where mechanical systems cannot be used. Glass containers such as carboys and winchesters should never be transported except in baskets. Suitable devices for emptying them should be provided so that an easily controllable flow of liquid is obtained. The use of protective clothing forms a good second line of defence but should not be relied on as the only safeguard.

Vitamins' Chairman Attacks Ministry Policy of Importing from Drug Pirates

VITAMINS, manufacturers of pharmaceutical and animal feeding stuffs hope for even better results than those recorded for 1960-61 (see 'Commercial News'). Turnover of all the divisions has materially increased, but so have costs, and every effort is being made to counter increased costs by higher efficiency.

Possibilities of developments in overseas markets are being actively studied. The Italian factory is now working at a profit and it will be possible to increase output considerably with no further capital expenditure. "Very considerable" increases in output can be achieved with a relatively modest outlay.

Attacking the policy of the Minister of Health, Vitamins' chairman, Mr. H. C. H. Graves, said that the Minister has taken the unprecedented step of offering to purchase the nation's requirements of certain essential products, protected by patents in this and other countries, from pirates.

Mr. Graves contrasted the treatment of the pharmaceuticals and fine chemicals industry with that of the agricultural industry in the U.K. "Is it not worth paying the pharmaceutical and fine chemical industry justly for its goods instead of importing from counterfeiters dumped goods to save a few pounds?" asked Mr. Graves.

Handling Precautions for Aluminium Powders

PRECAUTIONS necessary during the 'Production and storage of powders of aluminium and magnesium and their alloys' are outlined in a technical information sheet (No. 5003) issued free by the Fire Protection Association, 31-45 Gresham Street, London E.C.2. Ignition of these highly flammable powders even in the absence of ostensible means of ignition has occurred, and it is assumed that self-ignition from electrification of the particles has been responsible. The risk of explosion must always be faced, and precautions taken in the design of the plant to confine its effects. There is also the risk of secondary explosions which is always present where there are accumulations of dust. The process plant should therefore be as dust-tight as possible.

Overseas News

SLOW-DOWN IN RATE OF INCREASE OF FRENCH CHEMICAL TURNOVER

OVER the first half of 1961, sales of the French chemical industry were higher by 7% than those for the corresponding period of 1960; this compares, however, with an increase of as much as 20% for the whole year 1960 as compared with 1959. Production rose by varying amounts according to the branch of chemical industry concerned, the increase being of as much as 15% over the first 1960 half-year for organic chemicals and 25% in the special cases of phenol and methanol.

Total exports rose by only some 2% over the period, due partly to falling-off of deliveries to Algeria; exports to countries outside the franc zone rose by comparison by 4%. Imports, on the other hand, rose by as much as 16%. Wholesale chemical prices rose by an average of 1.7% over the first 1960 six-month period.

A review of French petrochemical industry appeared in C.A., 16 September, p. 399.

Contract for First Thai Refinery Placed

Contract for the first of the two Thai oil refineries referred to in 'Overseas News', 23 September, has been placed with the Thai Oil Refinery, a company supported by 10 international concerns, including Shell Petroleum. The 40,000 bbl./day refinery will cost $35 million and will be handed to the Thai Government after 10 years. Construction will start in November and is due for completion in 1963.

South African Dumping Duty on Canadian MEK

South Africa has imposed a dumping duty on a number of chemicals, when imported in bulk from Canada, including sec-butyl and n-propyl alcohols, mixtures of methyl ethyl ketone, acetals and butylene oxides; crude amyl alcohol; mixtures of ethyl and isopropyl alcohols; mixtures of ethyl and isopropyl acetates; methyl isobutyl ketone.

Bayer-Metal Hydrides Link on Sodium Boronate

Farbenfabriken Bayer AG, Leverkusen, West Germany, and Metal Hydrides Inc., U.S., have signed an agreement under which the two firms will co-operate in expanding sodium boronate markets. Metal Hydrides are the biggest American producers and Bayer the sole European producers of this compound; Bayer's new process for its production was mentioned in C.A., 22 April, p. 66.

The companies will exchange information on the use of sodium boranate in various branches of industry, as well as co-operation in the sphere of patents and licences. Under certain conditions manufacturing know-how may also be exchanged.

State Oil Co. Aid for Israel P.V.C. Project

Electrochemical Industries Frutarim Ltd., Acre, Israel, are to erect a p.v.c. plant near Haifa with a capacity of 10-12 tonnes/day. The project will cost some $3 million, financial aid to come from the Delek Israeli State oil company. Some 80% of Electrochemical Industries' shares are held by American Electrochemical Industries, of the United States. The plant is expected to be completed in early 1963.

200 T.P.D. Ammonia Plant for Monsanto

A new 200 ton-per-day ammonia plant is planned by Monsanto. Sited at Muscatine, Iowa, the plant is scheduled to go on stream during the autumn of 1962. Monsanto are at present building a 15,000 ton anhydrous ammonia terminal at Muscatine.

Polish Petrochemical Project Speeded Up

Construction of the oil refinery and petrochemical works at Czechowice, Poland, is now expected to be completed by 3 December, a month earlier than planned. The unit will have a processing capacity of 500,000 tonnes/year. Construction costs are given as 563 million zloty and annual production worth after full completion 1,800 million zloty. Poland will save some $U.S.5.5 million on imports as a result of the new plant.

Danubian Polypropylene Named Daplen

Daplen is the name now given to the isotactic polypropylene now produced at Mannswörth, Austria, by Danubia-Petrochemie AG, Vienna. Raw material will be supplied by Montecatini until September of next year, when the Oesterreichische Mineralölverwaltung of Austria will complete work on their catalytic cracker.

New Acetylene Plant for Union Carbide Canada

Construction of a new acetylene plant on the premises of their large capacity oxygen plant at Oakville, Ontario, has been initiated by Union Carbide Canada Ltd., Linde Gases Division. As well as producing acetylene the plant will provide filling facilities for oxygen, nitrogen and argon both liquid and gas, which are produced at the same location. Full production of acetylene is scheduled for 1 November. The liquid oxygen plant went on stream December 1960.

U.S. Manufacturers Cut Adipic Acid Price

U.S. manufacturers of adipic acid—Du Pont, Monsanto and National Aniline Division of Allied Chemical—have cut the price of the material. Du Pont made the first move with 10% cut to 29 cents a lb. from the long established price of 32.25 cents. By doing this they hope to increase the consumption of adipic acid for uses other than nylon such as intermediates for plasticisers, polyesters and synthetic lubricants.

Fertiliser and Petrochemical Expansion in Sicily

The Edison subsidiary Sincat (Società Industriale Catanese) is shortly stepping up output of chemical fertilisers from its Sicilian operations to 800,000 tonnes/year. Heart of the new plant additions will be a cracking unit that will produce olefins, utilising primary-distillation gasolene from the refinery at Augusta. The new plants will yield ethylene, propylene, liquefied petroleum gases, high-octane-number gasolene, and fuel oil.

Hungarians Build and Equip Ghana Drug Factory

Hungarian engineers will build and equip a pharmaceutical factory in Ghana under an agreement between the Ghanian authorities and the trading company, Komplex. To be built in Accra to Hungarian designs, the factory is expected to be extended in later years to serve as a basis for an independent pharmaceutical industry in Ghana.

E. German Aid for Burmese Chemical Industry ?

The two Burmese trade bodies, Industrial and Commercial Council and Federation of Trades Organisation, are reported to have started negotiations with representatives of the Soviet zone of Germany for the possible future purchase of East German-made plants for the production of chemicals, paints and a number of chemical and plastics end-products.

U.S. Firm Wins Contract for Kuwait Desalting Plant

The Government of Kuwait, which already has a saline water conversion complex for distilling more than 6 million gall./day, using Arabian Gulf water, has now awarded a $418,000 contract to Ionics Inc., Cambridge, Mass., U.S., for a 240,000-gall./day electrodialysis plant. This is claimed to be the largest commercial electrodialysis unit ever put under contract, but is regarded by the Kuwait authorities only as a pilot project; further equipment for handling several million gall. may be installed if this pilot plant proves satisfactory.

PEOPLE in the news

● **Dr. Kurt Hansen,** director of Farbenfabriken Bayer AG, of Leverkusen, has been appointed the company's chairman to succeed the late Prof. Dr. Ulrich Haberland. Dr. Hansen has been with Bayer and its forerunner I.G. Farbenindustrie AG for the whole of his working life. Dr. Hansen is 51.

● **Mr. W. Johnstone,** commercial director of Plant Protection Ltd., and **Mr. A. D. Lees,** joint managing director of the I.C.I. Nobel Division, have been appointed visiting directors of Billingham Division. They succeed **Mr. E. T. Grint,** I.C.I.'s chief labour officer, now a visiting director of Alkali Division, and **Mr. J. L. Tedbury** of General Chemicals Division. Three new visiting directors for Heavy Organic Chemicals Division are: **Mr. W. A. M. Edwards,** I.C.I. purchases controller, **Mr. J. V. S. Glass,** technical director of General Chemicals Division, and **Mr. S. D. Lyon,** engineering director of Wilton Works.

● **Mr. R. B. W. Bolland,** formerly general manager of Head Wrightson Stockton Ltd., has been appointed London manager of Head Wrightson Co. Ltd.

● **Mr. John T. Lewis** has been appointed a director of Staveley Industries Ltd. He is chairman of H.P. Sauce Ltd., and deputy chairman of Wellington Tube Holdings Ltd. Upon his appointment to the parent company board, Mr. Lewis relinquishes directorships of two Staveley group companies, Bradley and Foster Ltd., of Darlaston, and the Birmingham Chemical Co. Ltd., Lichfield.

● **Mr. T. R. Williams,** a chemical engineer who until now has been engaged in research under Dr. D. C. Freshwater at Loughborough College, is to head the new chemical plant production department set up by Metal Formations Ltd., Coseley, Staffs.

● **Professor Giulio Natta** has been awarded the first International Synthetic Rubber Gold Medal presented by *Rubber and Plastics Age.*

● **Dr. E. J. Dickinson, F.R.I.C.,** previously of the D.S.I.R., British Road Tar Association, and most recently principal research officer, Coal Research Division, C.S.I.R.O., in Australia, has joined the Burt, Boulton and Haywood organisation. He will be responsible, jointly with **Mr. D. H. Spranklin, A.R.I.C.** for group development and research in the tar distillation and chemical fields.

● **Sir Leonard Owen,** who is resigning next year as a full-time member of U.K. Atomic Energy Authority, will join the board of United Gas Industries Ltd. on 1 October. He will become chairman of two subsidiaries—Dowson and Mason Ltd. and Vacuum Metallurgical Developments Ltd.

● **Mr. Desmond Ambrose,** who was until recently, manager of the Process Control Division of Constructors John Brown Ltd., has been appointed manager of the Southern Division of Fischer and Porter Ltd., manufacturers of flow-meters and process control instruments. He will operate from the southern sales offices of Fischer and Porter Ltd. at 205, Station Road, Harrow, Middlesex.

● **Mr. E. E. Bullen,** who retires on 30 September as finance director of Shell Chemical Co. Ltd., will be succeeded by **Mr. W. F. Tuson,** who will be known as director, finance and economics; the company's Economics and Planning Department, under **Mr. A. J. Gait,** will report to him.

● **Mr. A. N. Holmes** has been appointed general manager, Plastics and Rubbers Division of Shell Chemical Co. Ltd., from 1 October. He succeeds **Mr. W. K. McGavin,** who as a director of Shell Chemical Co. will be undertaking new responsibilities within the company. Mr. Holmes joined the Shell Group in 1937 as a chemist and was transferred to the Shell Research Laboratories in Amsterdam in 1939 where he worked on a petrochemical pilot plant. After the war he served with Shell in Singapore, Stanlow and the U.S. before returning to Stanlow as chief chemist at the new chemical plant. In 1954 he was sent to Point Fortin, Trinidad as refinery manager and three years later returned to London as assistant manager of Manufacturing Operations Department, Shell Refining Co. Since January 1959 he has been manager of Shell Chemical's Economics and Planning Department in London.

Shell Chemical executives: A. N. Holmes, above, W. F. Tuson, top right, and A. J. Gait, right

● **Mr. Z. D. Bonner,** formerly Far East manager, has been appointed manager, Crude Oil Department of Gulf Eastern Co., 2 Portman Street, London W.1. He succeeds **Mr. F. R. Drury,** who has been transferred to Gulf's general office in Pittsburgh.

● **Dr. E. G. Woodroofe,** who has been appointed a vice chairman of Unilever Ltd., was born in 1912 and not 1902 as stated in 'People in the News,' 2 September.

● **Sir William Cook, C.B.,** Member of the Authority for Reactors, heads a party of scientists from the U.K. Atomic Energy Authority who are visiting the U.S.S.R. from 26 September until 10 October. The team will have discussions with Russian scientists on the subject of reactor physics and experimental fast reactors. Other members of the team are **Mr. P. Brock** (Reactor Group, Dounreay), **Dr. C. G. Campbell** (Reactor Group, Winfrith), **Mr. A. G. Frame** (Reactor Group, Risley), **Mr. P. W. Mummery** (Reactor Group, Winfrith), **Dr. P. Murray** (Research Group, Harwell), **Mr. D. C. G. Smith** (Reactor Group, Dounreay), **Dr. R. D. Smith** (Reactor Group, Winfrith). This is the second of a series of exchange visits between Russia and the U.K. under the agreement on collaboration on the peaceful uses of atomic energy signed in London on 19 May.

● **Mr. C. A. Lister** has been appointed commercial manager of Shell Chemical Co.'s Agricultural Division. He joined the company from Shell International Chemical Company where he was area co-ordinator for Australasia and South-East Asia. Since joining the Shell Group in 1950 Mr. Lister has worked in the Middle East and India and has spent two years on product development work and research at the Shell Agricultural Research Farm at Woodstock in Kent.

● **Mr. P. G. King** has been appointed area marketing manager, Yorkshire, and **Mr. E. H. Taylor-Brown** area marketing manager, Midlands, of Chemstrand Ltd., manufacturers of Acrilan acrylic fibre.

DIARY DATES

THURSDAY 5 OCTOBER

S.A.C.—London: Instn. Mech. Eng., Birdcage Walk, London, S.W.1. Two-day meeting on Advances in analytical chemistry in nuclear technology. Starts 2.30 p.m. on 5 October and 10.30 a.m. on 6 October. (See also 'Distillates').

FRIDAY 6 OCTOBER

S.A.C. S.C.I.—Glasgow: Room 24, The Royal Coll. of Sc. & Tech., 7.15 p.m. 'The applications of P.E.' by A. W. E. Staddon & 'Analysis of P.E.' by A. F. Williams.

S.C.I.—London: Wellcome Foundation Auditorium, Euston Rd. 'Approaches to the chemotherapy of virus diseases'.

S.C.I.—London: 14 Belgrave Sq., S.W.1, 6 p.m. 'Styrene monomer manufacture' by J. N. Hornibrook.

Commercial News

- **Lawes Expansion Schemes Make Progress**
- **Vitamins Profit Up, Dividend Same**
- **Reichhold Declare 7½% Dividend**
- **Anic Double Capital to Finance Projects**

Laporte Industries

Morgan Grenfell have underwritten the issue by Laporte Industries Ltd., of 5,347,082 ordinary shares of 10s each by way of rights to ordinary shareholders in the proportion of one-for-five. The issue price of 18s per share will be payable as to 10s per share on acceptance on or before 23 October 1961 and 8s per share on or before 12 January 1962. The new shares will not rank for the 3% interim to be paid on 1 December.

Lawes

The various schemes for expanding the activities of Lawes Chemical Co. Ltd., Barking, are making satisfactory progress according to the annual report. The company will enter the general warehousing business with the completion in December of this year of new warehouses covering 150,000 sq. ft. The new warehouse, built by J. Burley and Son, adjoins the works at Barking.

Chairman of the company, Mr. Frank Perkins, expressed confidence in British fertiliser techniques and products. In the event of the U.K. entering the Common Market, he believes that, contrary to popular opinion, the industry will not be in an unfavourable position.

'Shell' Transport

'Shell' Transport and Trading and Royal Dutch Petroleum are maintaining their interim dividends at 2s tax free and Fl.2.25 for 1961. Capitals of both companies have been increased by scrip issues.

Vitamins

Net profit for Vitamins group of companies for the year ended 31 March 1961 was £151,953 (£129,280). The dividend for the year is 12½% (same).

Ampol Petroleum

Ampol Petroleum, the Australian oil company, are raising £A2 million by issuing shares to California Texas Oil, New York. More than 90% of stockholding will remain in Australian hands.

Anic

To help finance further industrial developments, Anic S.p.A., Milan, the chemicals operating subsidiary of the Italian State-owned E.N.I. oil group, are to double their capital to 72,000 million lire.

Baird-Barlow

As a result of their cash bid (C.A., 9 Sept., p. 370), Baird Chemical Industries Inc., New York, have now acquired Barlow Chemical Corporation, Ossining, New York, producers of quarternary ammonium compounds and tertiary amines for the past nine years. In addition to these products which find use as effective germicides in sanitary chemicals and pharmaceuticals, Barlow will manufacture several amine compounds for use as urethane catalysts.

Baird will market Barlow's present products and develop commercial markets for Barlow's research products in the U.S. and overseas markets.

Brockville Chemicals

Some 10,000 additional 6% non-cumulative participating preferred shares, par value $10, of Brockville Chemicals Ltd. have been added to the trading list of the Montreal Stock Exchange. This is the result of an agreement dated November 20, 1959, between Brockville Chemicals, Sogemines Ltd. and Société Carbochimique S.A., (a Belgian corporation affiliated to Société Générale de Belgique) under which Sogemines and Carbochimique agreed to take up and pay for such shares at par, if requested by Brockville Chemicals before 20 November, 1961.

Pinoya Holdings

Unilever's offer to acquire the whole of the issued shares of Pinoya Holdings Ltd., producers of Domestos detergents, has been accepted by more holders of more than 90% of shares and the offer has become unconditional.

Reichhold

At the board meeting of Reichhold Chemicals Ltd., held on 19 September, an interim dividend on the ordinary share capital of the company on account of the year 1961 was declared at the rate of 7½%, equal to 4½d per 5s share less income tax at the standard rate.

INCREASE OF CAPITAL

ALLIED COLLOIDS LTD., 2 The Green, Richmond, Surrey. Increased by £169,000, beyond the registered capital of £206,000.

NEW COMPANIES

CHARABOT ET CIE LTD. Cap. £35,000. Importers, exporters, manufacturers of and dealers in essential oils, essences, oils, aromatic chemicals, compound perfumes, scents, etc. Subscribers: J. A. Steemson and Beryl K. Edwards (chartered secretaries). Reg. office: 37 King Street, London W.C.2.

LAUREL CHEMICALS AND PRODUCTS LTD. Cap. £100. Manufacturers of and wholesale and retail dealers in all kinds of materials, chemicals, etc. Directors: L. E. Newton and D. G. Pryke. Reg. office: 2 Waldeck Road, Luton, Beds.

FRANKLIN DEVELOPMENTS LTD. Cap. £1,000. Research development and experimental chemists and exploiters of micro-organisms and biological substance; manufacturers of and dealers in pharmaceutical, medicinal, chemical, industrial and other preparations; cements, oils, paints, pigments, colours, etc. Solicitors: Waltons, 35/7 King Street, Luton.

Market Reports

FAIR VOLUME OF NEW BUSINESS

LONDON Industrial chemical products are mostly on a steady price basis and the movement against contracts continues at a satisfactory level. There has been a fair enquiry for new business on home account and export demand has been reasonably good. Copper sulphate has lost its recent slight increase and is currently quoted at £77/ton less 2% f.o.b. Liverpool.

Conditions in fertilisers show little change, while there has been nothing of fresh importance to record on the coal tar products and the undertone of the market continues firm.

MANCHESTER With holiday stoppages no longer a factor, a fair weight of new business has been reported for chemicals and allied products, including some forward transactions extending over the last quarter of 1961. In the home section the textile bleaching, dyeing and finishing trades and other industrial users are specifying for reasonably good deliveries against contracts, and the shipping movement has been maintained. Prices generally are on a steady basis, though sulphate of copper has been reduced (see 'London').

SCOTLAND The level of trading has not changed during the past week. Demands have been more or less nominal and covered the usual day to day range of industrial chemicals. Quantities, however have been fairly well maintained. Prices have shown little change and remain steady. In regard to agricultural chemicals the position here shows no change.

Although improvement in the export market would be welcomed, conditions are reasonably steady.

New Chemical Plants in the U.K.

Featured in this exclusive *Chemical Age* table are large-scale expansion and modernisation projects, as well as smaller schemes, involving a total investment of well over £250 million. This survey includes chemical plants opened in the U.K. since the table was last published in September 1960, as well as those now under construction or in the planning stage. Notes are given in the final column on the stage of construction.

COMPANY	PROJECT	DATE
Abbott Laboratories Ltd.	£1.5 million ethical pharmaceutical plant at Queenborough, Kent, as first stage of development at this 130-acre site. Main contractors: C.A.S. (Industrial Developments) Ltd.	Completed autumn-1961
Abril Industrial Waxes Ltd.	Improved plant for synthetic waxes at Bridgend, Glam.	Completed
Albright & Wilson (Mfg.) Ltd.	Two additional units at Widnes to expand capacity for carbon tetrachloride	Completed 1961
	£500,000 plant at Kirkby for Calgon water softener. Engineered by A. & W.	Completed 1961
Alcock (Peroxide) Ltd.	New sodium metasilicate plant with higher capacity to replace existing unit at Luton. Main contractors: Power-Gas Corporation Ltd.	Due for completion in 1962
Alluvial Products (Ireland) Ltd.	Plant at Drogheda, Eire, for converting peat into Berkoal used in production of castings. Capacity 12,000 tons/year by 1962	Plant opened July 1961
Associated Feed Manufacturers Ltd.	£2 million works at Belfast, inc. automatic system for dispensing vegetable and animal oils	Completed late-1962
Anderton-Richardson Fertilisers Ltd.	Fertiliser capacity at Howden Works, nearly doubled through introduction of acidulation and ammoniation reactions in granulation process	Completed
B.P.-California Ltd.	Aromatics plant at Isle of Grain to produce o-xylene, p-xylene and ethylbenzene. Main contractors Badger Ltd., Bechtel International & Geo. Wimpey & Co.	First production due end-1961
Beecham Group Ltd.	£1.5 million antibiotics plant at Worthing	In production early-1961
Berk, F. W., & Co. Ltd.	Molten sulphur storage tank at Abbey Mills, Stratford, with 1,000 tons capacity. Designed by Berk engineers	In use late-1960
	Contact process sulphuric acid plant at Abbey Mills, Stratford. Design and construction by Berk & Simon-Carves Ltd.	Commissioned May 1961
Berk Pharmaceuticals Ltd.	Pharmaceutical processing plant to be built probably in Home Counties	Planned
Bexford Ltd.	Extensions at Manningtree for production of plastics photographic film base. Main contractors: Constructors John Brown Ltd.	In hand
	Manningtree plant for production of polymer. Main contractors: Blaw Knox Chemical Engineering Co. Ltd.	Due for completion end-1961
Bibby, J., & Sons Ltd.	Oilseed processing plant at Liverpool will use hexane in solvent extraction process. Main contractors: Blaw Knox Chemical Engineering Co.	Due on stream by mid-1962
Bitmac Ltd.	Benzole refinery to process 8 million gall./year coke oven benzole to produce high-purity benzene, toluene, 3° xylene and indene rich fraction at Richard, Thomas & Baldwin's Ltd.'s Spencer Works, S. Wales. Plant will cost over £300,000. Process and contractors: A.P.V.	To be commissioned April 1962
Boake Roberts, A., & Co. Ltd.	Further plant to make epoxidised oils and esters at Widnes.	In hand
	Additional plant at Stratford and Rainham for perfumery chemicals	In hand
Boots Pure Drug Co. Ltd.	Contract for new plant awarded to Humphreys & Glasgow Ltd. No details available	In hand
Borax Consolidated Ltd.	Extension to boric acid plant at Belvedere, Kent	Completed spring-1961
Bradford, City of, Sewage Dept.	50 tons/day sulphuric acid plant. Main contractors: Simon-Carves Ltd.	Under construction

COMPANY	PROJECT	DATE
British Celanese Ltd.	Aromatics condensate separation unit to produce nitration grades of benzene and toluene, plus 3° xylene at Spondon, also cyclopentadiene recovery unit of British Celanese design. Main contractors: A.P.V.; process for main plant by A.P.V.	Commissioned autumn 1961
	Extensions to cracking unit for Spondon petrochemical plant	Due for completion end-1961
	First U.K. plant to produce peracetic acid from petroleum source, at Spondon	Completed
	Plant at Spondon for monochloracetic acid and sodium monochloracetate. Capacity will meet foreseeable U.K. needs and give export surplus	Due on stream early-1962
	Further expansion of vinyl acetate capacity at Spondon, following completion of extension unit	Planned
	Expansion of acetate film and moulding units	Due for completion in 1961
	New plant at Spondon for Stretford liquid gas purification process. Main contractors: W. C. Holmes & Co. Ltd.	In hand
British Cellophane Ltd.	Further expansion of plant at Barrow-in-Furness, following completion of extension work	In hand
British Drug Houses Ltd.	New £523,000 four-storey warehouse and office building at Poole, will release space so that capacity in Laboratory Chemicals Division can be more than doubled. This is last stage in £1 million programme. Main contractors: John Laing Construction Ltd.	Due for completion mid-1962
British Enkalon Ltd.	Plant to make nylon-6 at Antrim, N.I. to employ 2,000 workers. Main contractors: Matthew Hall & Co. Ltd.	In hand
British Geon Ltd.	'Geon 8', £2 million extension to p.v.c. plant at Barry, Glam., with construction supervised by D.C.L. Engineering Division. Contractors for monomer plant: Power-Gas Corp.	For completion autumn 1961
	'Geon 9', further p.v.c. extension at Barry, Glam.	In planning stage
British Hydro-Carbon Chemicals Ltd.		
At Grangemouth	Methanol plant. Main contractor: Chemical Construction (G.B.) Ltd.	Completed 1961
	Ethylene dichloride plant using Ethyl licence. Main contractors: Lummus Co. Ltd.	Completed 1961
	Butadiene plant using Esso licence. Main contractor: Chemical Construction (G.B.) Ltd.	Completed 1961
At Baglan Bay	Ethylene plant. Main contractors: Stone & Webster Engineering Ltd.	Due for completion in 1962
	Ethylene dichloride plant, using Ethyl licence. Main contractors: Lummus Co. Ltd.	Due for completion in 1962
	Butadiene plant, licensed by Shell. Main contractors: Stone & Webster Engineering Ltd.	Due for completion in 1962
British Petroleum Co. Ltd.	£8 million oil refinery with through-put of 1.3 million tons of crude/year on Belfast Lough	Due for completion early-1963
	30,000 tons/year plant for range of special solvents at Isle of Grain. Main contractors: Constructors John Brown Ltd., Motherwell Bridge & Engineering Ltd. & Geo. Wimpey & Co. Ltd.	Commissioned late 1960
	23,000 b.p.d. catalytic reformer at Isle of Grain refinery	Due for completion early-1962
British Sidac Ltd.	£500,000 contract for design, supply and construction of sulphuric acid recovery and storage plant at St. Helens. Main contractors: Process Plant Contractors (Campbell) Ltd.	Due for completion by mid-1962
British Tar Products Ltd.	Plant at Sheffield for production of methylated spirits. Capacity is around 2,000 tons/year	Due on stream by end-1962
	Restoration work on naphthalene refining plant substantially completed	In full production by autumn 1961
	Hydrogenation plant at Sheffield for increased and more economical production of cyclohexanol, cyclohexanone, methyl cyclohexanol and methyl cyclohexanone, plus further improvements in production of esters, such as dicyclohexyl phthalate and dimethylcyclohexyl phthalate, with further progressive development of allied products of hydrogenation	For commissioning in last quarter of 1961

COMPANY	PROJECT	DATE
British Titan Products Co. Ltd.	Major development and extension of titanium oxide plant and services at Grimsby Works	In hand for completion in 1963
	Modernisation of titanium oxide plant at Billingham Works	Due for completion in 1964
Burts & Harvey Ltd. (incorporating Alchemy Ltd.)	Maleic anhydride and fumaric acid plant at Belvedere, Kent. Main contractors: Petrocarbon Developments Ltd.	Completed
Bush, W. J., & Co. Ltd.	New five-storey essence compounding department at Hackney, London, E.	In hand
Cabot Carbon Ltd., Dispersed Pigments Division	25,000 sq. ft. extension to dispersed pigments works at Dukinfield, Ches.	Completed early-1961
Carless, Capel & Leonard Ltd.	15,000 tons/year plant for hydrocarbon solvents and chemicals	On stream September 1961
Carnegies of Welwyn Ltd.	500 tons/year plant at Welwyn Garden City for production of new organic synthetic chemicals, inc. phenyl acetic acid, benzyl cyanide, *b*-ethoxy propionitrile, allyl ethers of trimethylol propane and glycerol for use in polyester resins. Production of tetrahydrophthalic anhydride is planned	Completed in 1961
Chemstrand Ltd.	50% increase in Acrilan acrylic fibre at Coleraine, N.I., capacity to 15 million lb./year	Completed mid-autumn 1961
	Second extension of Acrilan capacity to 25 million lb./year	Due for completion by end-1962
Clayton Aniline Ltd.	£6 million modernisation and development scheme at Manchester	Due for full completion in 1964
Coalite and Chemical Ltd.	Modernisation scheme to increase output of Askern Works by two-thirds	Construction to start by end-1961
	Buildings and plant for solid chemicals, particularly catechols	Commissioned January 1961
	Distillation unit at central refinery to increase crude coal oil treatment capacity	To be commissioned March 1962
Courtaulds Ltd.	10 million lb./year expansion of Courtelle acrylic fibre capacity at Grimsby to raise output to 22 million lb./year	In production early-1961
	10 million lb./year Courtelle expansion at Grimsby, raising output to 32 million lb./year	Due for completion early-1962
	Plant using Snia Viscosa process for production of 10,000 tons/year caprolactam, plus nylon-6 polymer. Caprolactam unit will use toluene produced by British Celanese at Spondon	In hand
	Extension to carbon tetrachloride plant	Completed
Croid Ltd.	Extension to p.v.a. and other emulsion glues plant at Newark-on-Trent	Completed
Cyanamid of Great Britain	3,000 tons/year melamine crystal plant at Gosport. Designed and constructed by Cyanamid and costing £430,000	On stream, July 1961
	Large-scale fermentation plant at Gosport, for Lederle Division	Completed
Distillers Company Ltd., The Chemical Division	£2 million plant at Hull to produce acetic acid directly from petroleum hydrocarbon feedstock by new D.C.L. process. Main contractors: Lummus Co. Ltd.	For completion by end-1961
	Extension to Hull acetic acid plant	Planned
	Production of synthetic rubber by improved process	Planned
Distillers Co. (Biochemicals) Ltd.	£500,000 extension of plant and research facilities, comprising crystallisation building which introduces new automatic antibiotic processes; extraction plant. Main contractors: Sir Alfred McAlpine & Sons Ltd., D.C.L. Engineering Division (South)	Completed, June 1961
Dow Agrochemicals Ltd.	New plant to produce Zoamix coccidiostat at King's Lynn. Main contractors: Constructors John Brown Ltd.	On stream, early-1961
Du Pont Co. (United Kingdom) Ltd.	£Multi-million TDI and phosgene plant at Maydown, N.I. Multi-million-lb. capacity, but slightly smaller than U.S. plants	Due for completion late-1963
East Midlands Gas Board	Experimental unit to remove H_2S and large proportion of organic sulphur using fluid oxide bed at Basford (5 million c.f.d. capacity)	Completed
	Benzole extraction plant at Grimesthorpe	Completed
	Catalytic organic sulphur removal plant at Litchurch	Completed

COMPANY	PROJECT	DATE
East Midlands Gas Board (cont'd.)	LPG reforming plant at Dunstable works. Main contractors: Simon-Carves Ltd.	In hand
Eastern Gas Board	Stretford sulphur extraction process plant will treat 4 million c.f.d. of gas at Norwich Works. Main contractors: R. & J. Dempster Ltd.	In hand
Electro-Chemical Engineering Co. Ltd.	8,000 gall./week capacity nickel brighteners plant at Sheerwater, Woking. Cost: £15,000. Consulting engineers: Campbell Gifford & Morton Ltd.	In production early-1961
Esso Petroleum Co. Ltd.	4.5 million t.p.a. (100,000 b.p.s.d.) refinery at Milford Haven. Main contractors: Foster Wheeler Ltd. Cost was £18 million	Completed late-1960
	£5.5 million second steam cracker at Fawley to produce ethylene, propylene and butadiene will be largest of its kind in Europe. Part of ethylene output will be piped to I.C.I. at Severnside. Main contractors: Foster Wheeler Ltd.	Due on stream end-1961
	Fawley-Severnside ethylene pipeline to I.C.I. ethylene-oxide plant at Severnside. Main contractors: Constructors John Brown Ltd. Cost is £850,000	Due for completion early-1961
	30,000 tons/year butyl rubber plant at Fawley, which will meet all U.K. needs and allow for export. Cost is £4.3 million. Main contractors: Foster Wheeler Ltd.	Due on stream 1962/63
	14,000 tons/year lube-oil additives plant; largest in Europe. Main contractors: Foster Wheeler Ltd.	On stream January 1961
	For details of new ammonia plant see 'Milford Haven Ammonia Co. Ltd.'	—
	Bulk oxygen/nitrogen plant at Fawley refinery. Main contractors: Air Products (Great Britain) Ltd.	Completed late-1960
Evans Medical Ltd.	New Virus Division building (10,400 sq. ft. overall area) at Liverpool H.Q. for production and development of virus vaccines. Contractors: W. Neill & Son (St. Helens) Ltd.	Completed late-1960
	Extension to packaging materials store at Liverpool (total area is 17,000 sq. ft.). Contractors: W. Neill & Son (St. Helens) Ltd.	Completed 1961
Farmers Co. Ltd.	50 tons/day sulphuric acid plant at Brigg. Main contractors: Simon-Carves Ltd.	In production
Farnell Carbons Ltd.	New plant at Ditton for production of high-grade carbons	In full production
Fisons Fertilizers Ltd.	New complex at Milford Haven to make ammonium nitrate and other nitrogen products. Ammonia will come from new joint Fisons-Esso plant—see 'Milford Haven Ammonia Co. Ltd.' Total cost of these projects will be £12 million.	Due on stream in 1964; construction to start early-1962
	£1 million extension at Immingham for extension of phosphoric acid plant phosphate rock storage and to make ammonium phosphate. Engineered by Fisons	Work in progress
	£200,000 facilities at Leith for production and storage to replace existing plant	Due for completion by May 1962
	Compound fertilizer granulating plant at Cliff Quay Works. Main contractors: McKee Head Wrightson Ltd.	—
Fisons Pest Control Ltd.	Plant at Harston to produce carbyne selective weedkiller. Current output of 250,000 gall./year is sufficient for 1 million acres of cereals. Output can readily be expanded. Designed and constructed by Fisons Pest Control Ltd.	Commissioned in January 1961
	Pilot plant building, inc. offices and labs., at Harston with 21,600 sq. ft. floor area. Now being equipped with 'wet' and 'dry' plant and equipment for use by Chemical Development Dept. Main contractors: Rattee & Kett	Opened in June 1961
Forth Chemicals Ltd. At Baglan Bay	£3 million styrene monomer plant with 50,000 t.p.a. capacity. Licence and engineering by Monsanto Chemicals Ltd. Main contractor to be announced	Due for completion in 1962
At Grangemouth	Expansion of styrene monomer capacity to 50,000 t.p.a. Licence and engineering by Monsanto Chemicals Ltd.	Completed early-1961
Fullers' Earth Union Ltd.	Extension to plant at Cockley Works, nr. Redhill, to produce highly-activated bleaching earth. Main contractors: Taylor Woodrow Construction Ltd.	Due for completion by end January 1962

COMPANY	PROJECT	DATE
Garton Sons & Co. Ltd.	£1 million plant at Battersea to produce 2,000 tons of starch a week	Completed autumn 1961
	Second stage of development involving new glucose factory	Due in production spring 1962
Geigy Pharmaceutical Co. Ltd.	New £1 million plant for compounding and packaging pharmaceuticals, at Hurdsfield Industrial Estate	In hand
Goulding, W. & H. M. Ltd.	200 tons/day sulphuric acid plant at Dublin. Main contractors: Simon-Carves Ltd.	Nearing completion
Grange Chemicals Ltd.	Phthalic anhydride plant, using petroleum feedstock, at Hull. Capacity circa 15,000 t.p.a. Process licensors: Calchem; main contractors: Badger	Due for completion in 1962
Hawker Siddeley Nuclear Power Co. Ltd.	Large graphite plant, using Acheson process at Langley to produce 100 tons/year	Commissioned end-1960
	Expansion to 500-600 tons/year	Due for completion end-1961
Hedley, Thomas & Co. Ltd.	£58,000 extension to West Thurrock soap and detergents process unit. Main contractors: Holland Hannen & Cubitts	Completed
Hedon Chemicals Ltd.	Extensions to vinyl acetate plant at Salt End, near Hull, raises original capacity by some 60%. Main contractors: Distillers	Completed May 1961
	Further expansion of vinyl acetate capacity	Planned
Hickson & Welch Ltd.	Plant to separate pure o-nitrotoluene from crude mono-nitrotoluene at Castleford, Yorks. Process and contractors: A.P.V.	For completion autumn 1961
Howards of Ilford Ltd.	Expansion to raise sorbitol capacity by 1,500 tons/year. Contractors: L. A. Mitchell Ltd.	Now operating
	No. 2 phthalic anhydride plant to produce 3,000 tons/year. Contractors: Chemical Engineering Wiltons Ltd.	Due in operation late-1961
	New cyclic ketones plant to produce 2,000 tons/year of Sextone (cyclohexanone) and Sextone B (methylcyclohexanone) using improved processes. Contractors: W. J. Fraser & Co. Ltd.	In operation
	New 1,000 tons/year plant to raise capacity for plasticisers: cyclohexanol and methylcyclohexanol phthalate ester plasticisers	Due for completion early-1962—work proceeding to schedule
Imperial Chemical Industries Ltd.		
Alkali Division	£500,000 expansion at Winsford salt mine trebles capacity to 300,000 t.p.a.	Completed late-1961
Billingham Division	£6 million modernisation programme includes plant for hydrogen synthesis using oil	Programme due for completion 1963
At Billingham	Carbon black plant for installation in gas and power works	Planned
At Heysham	Extension to methanol plant, raising capacity by 45,000 tons/year. Engineering by I.C.I.	Due on stream 1962
	Planning permission sought for new nitiric acid plant	Construction to start Oct. 1961
At Severnside	£10 million project to produce 100,000 tons/year ammonia, plus associated plants for urea and fertilisers	Due on stream 1962
Dyestuffs Division	£10 million plant with capacity of 15,000 tons/year for production of nylon-6 polymer. Site to be announced. Emser Werke/Inventa process	In hand
At Severnside	Large-scale caprolactam plant for nylon-6 production. Emser Werke/Inventa process	Due on stream early-1963
At Wilton	Nylon IV expansion with capacity for 23,000 tons/year	Due for completion late-1961
	Nylon V expansion to raise output by 25-30%	Planned
At Fleetwood	Major plant for production of toluene di-isocyanates. Main contractors: Constructors John Brown Ltd.	Completed mid-1961
	£250,000 intermediates plant. Main contractors: John Thompson (Wolverhampton) Ltd.	In hand
Fibres Division		
At Kilroot, N.I.	Terylene spinning plant. Main contractors: George Wimpey & Co. Ltd.	Due for completion in 1963
At Wilton	Further extension of Terylene capacity to raise capacity to 50 million lb./year	In hand; major units already on stream

COMPANY	PROJECT	DATE
Billingham Division (cont'd.) At Wilton	5 million lb./year plant for Ulstron polypropylene filament yarn under Montecatini licence	Due on stream end-1961
General Chemicals Division At Cassel Works	10,000 tons/year extension of methyl methacrylate plant at Cassel Works	On stream recently
	Even larger extension to methyl methacrylate than that announced for Rotterdam site, where 20,000 t.p.a. plant will be built	In hand
	Plant to produce liquid anhydrous hydrochloric acid for sale	Due for completion in October 1961
	Extension of 8,000 tons/year of methyl chloride capacity	Due for partial completion in October; in production by July 1962
At Castner-Kellner Works	Extension of 25,000 tons/year of vinyl chloride capacity	Due for completion in 1961
	Substantial extensions to vinylidene chloride plant at Castner-Kellner Works	—
At Fleetwood	10,000 tons/year phosgene plant	On stream mid-1961
	Total chlorine capacity, at Fleetwood and Runcorn, expanded to 80,000 tons/year. Caustic soda capacity also extended	Completed
At Merseyside	Extensions to high-purity silicon plant raising capacity to 10,000 lb./year	In full production October 1960
At Runcorn	£1 million perchloroethylene plant with 20,000 tons/year capacity	Completed mid-1961
	85,000 tons/year carbide extension	Completed mid-1961
Heavy Organic Chemicals Division At Billingham	Extension of combined Topane (*o*-phenylphenol) and *p*-phenylphenol capacity to 1,000 t.p.a.	Due for completion end-1961
	Acetone capacity raised from 28,000 to 36,000 t.p.a. by modifications	On stream mid-1961
	Raising total carbonylation alcohols capacity to 140,000 t.p.a., by modification of process and erection of fourth unit with capacity of 30,000 t.p.a.	—
	General-purpose pilot plant for development chemicals	Due for completion late-1962
	New methylamines plant with capacity more than five times that of existing unit of 2,000-3,000 tons/year	Due on stream in 1963
	Extensions to existing ethylamines plant to more than double present capacity	Due for completion end-1961
At North Tees Site	£Multi-million crude oil distillation plant to handle 1 million tons/year	Due for completion by late-1962
At Severnside	Plants to produce 35,000 t.p.a. of ethylene oxide, ethylene glycol and associated products. EO plant designed by Scientific Design; others by I.C.I. Ethylene to be piped from Esso, Fawley	Due for completion end-1961
At Wilton	Production of 10,000 t.p.a. of maleic anhydride by air oxidation of butene	—
	£500,000 nitrogen plant at Middlesbrough to produce 5,000 cu.m./hr. at 5% increase. Contractors: British Oxygen Co. Ltd.	On stream mid-1962
	Two *p*-xylene plants at Wilton modified to raise outputs	Completed
	Ethylene capacity being raised from 120,000 to 140,000 t.p.a. by modifications	Completed by end-1961
Nobel Division At Ardeer	Three-stage extensions to silicones plant, including reactor stage, A.P.V. distillation plant and hydrolysis section. Silicones capacity doubled	Commissioned September 1961
	Nitric acid concentration plant using magnesium nitrate route	Completed end-1960
	Cordex fuse plant acids department	In production early-1961
At Dumfries	New methyl cellulose plant	Commissioned late-1960

COMPANY	PROJECT	DATE
Pharmaceuticals Division	Construction of new factory at Macclesfield, Ches., costing £4 million. Integration and expansion of facilities for manufacture, processing and warehousing of pharmaceutical products. Output will total several £millions a year	Due for completion in 1964
Plastics Division	Plant to produce polyvinylidene chlorine copolymers	On stream early-1961
At Darwen	£200,000 modernisation of Perspex plant, enabling output to be raised	Due for completion spring 1962
At Dumfries	Plant to produce 2,000 tons/year or more of Melinex polyester film	Commissioned early-1961
At Hillhouse Works	Extension of total division p.v.c. capacity to 70,000-80,000 tons/year	Completed mid-1961
	40% extension to division p.v.c. capacity, from 70,000-80,000 tons/year to 115,000 tons. Construction by I.C.I.	Due on stream by early-1963
At Wilton	£3 million polypropylene plant with 11,000 capacity using Montecatini licences. Main contractors: Constructors John Brown Ltd.	On stream late-1961
	Extension to polypropylene plant to double capacity to 22,000 tons/year. Main contractors: Constructors John Brown Ltd.	—
At Wilton	3,000 tons/year extension to Perspex acrylic sheet plant to raise capacity to 20,000 tons/year. Cost is £1 million; construction to be handled by I.C.I.	Due for completion by 1962
International Flavours and Fragrances (Great Britain) Ltd.	New plant at Enfield to double output	Due for completion mid-1962
International Protein Products Ltd.	First section of impulse process protein plant at Plymouth	On stream July 1 1961
	Solvent plant for production of protein isolate	Due on stream September 1961
Johnson, Matthey & Co. Ltd.	Production of cadmium pigments in new plant near Burslem	In production early-1961
Lancashire Tar Distillers Ltd.	Naphthalene refinery at Cadishead. Main contractors: Chemical Engineering Wiltons Ltd.	Completed
Laporte Acids Ltd.	Ferric chloride plant at Leeds	Completed
Laporte Chemicals Ltd.	Expansion of hydrogen peroxide capacity using AO process at Warrington. Contractors: Laporte Engineering Construction Dept.	Completed
	Extension to Warrington high-purity hydrogen plant to raise capacity by 50%. Main contractors: Power-Gas Corporation Ltd.	Commissioned summer 1961
	Sodium chlorite plant at Luton using Kesting process, licensed by Electrochemische Werke, Munich	In production by late-1960
Laporte Titanium Ltd.	£3 million expansion at Stallingborough to raise titanium oxide output from 30,000 to 50,000 tons/year.	Due for completion by early 1962
	Stallingborough project includes 300 tons/day sulphuric acid plant. Main contractors: Simon-Carves Ltd.	In production
Lawes Chemical Co. Ltd.	Modernisation of granulation and fertiliser handling plant at Barking	Completed
Leicester, Lovell & Co. Ltd.	Extension to Southampton plant to raise capacity from 14 million lb./year to 27 million lb. for thermosetting resins, inc. urea-formaldehyde, phenol-formaldehyde, epoxies and resorcinol-formaldehyde	In hand
Lever Brothers Ltd.	New plant raising output of glycerine at Port Sunlight	Completed early-1961
Lindsey & Kesteven Chemical Manure Co. Ltd.	Large-scale expansion of Saxilby, Lincs., fertiliser works	In hand
Lobitos Oilfields Ltd.	5,000 b.p.d. crude distillation unit at Ellesmere Port. Main contractors: Kellogg International Corp.	Completed autumn 1961
Magnesium Elektron Ltd.	5,000 tons/year plant at Hopton extracts magnesium of 99.9% purity from dolomite via thermal process	Planned
Marchon Products Ltd.	Extension of sulphuric acid and cement plant at Whitehaven	Due for completion end-1961
	Extension of Whitehaven phosphoric acid plant	Due for completion end-1961
	Sulphamic acid plant at Whitehaven with capacity to meet all U.K. needs. Manufacture of ammonium sulphamate also considered	Completed mid-1961

COMPANY	PROJECT	DATE
Midland Silicones Ltd.	First stage of £1 million expansion project at Barry, Glam., includes plant for methyl chloride; direct process unit to nearly double chlorosilanes output; and silicone fluids unit with more than double capacity of existing equipment. Engineering by Albright & Wilson (Mfg.)	Commissioned April 1961
	Second stage to quadruple output of silicone emulsions; further direct process reactor; and equipment for siloxane intermediates which will triple existing capacity	Due for completion in 1962
Midland Tar Distillers Ltd.	Extension and new plant at Oldbury to raise pyridine capacity from 200 tons/year to more than 600 tons and to yield higher outputs of α-, β- and γ-picolines and lutidines	Due on stream about March 1962
	New plant using Stretford liquid gas purification process at Oldbury. Main contractors: W. C. Holmes & Co. Ltd.	In hand
	Continuous naphthalene crystallising plant at Four Ashes	Completed
Milford Haven Ammonia Co. Ltd.	This new joint Esso-Fisons company will produce 150,000 tons/year of ammonia at Milford Haven refinery. Total cost £4 million. Ammonia will be piped to wholly-owned Fisons plant.	Due for completion in 1964
Mobil Oil Co. Ltd.	Crude topping unit to expand capacity at Coryton refinery with initial throughput of 15,000 b.p.d. Main contractors: Kellogg International Corporation Ltd.	Due on stream early-1962
Monsanto Chemicals Ltd.	15 million lb./year maleic anhydride plant at Newport, Mon. uses Scientific Design process and trebles previous capacity	Completed early-1961
	New plant at Newport, Mon. for toughened polystyrene	Commissioned February 1961
	Foamable polystyrene expansion at Newport, Mon., doubling present capacity	Due for completion early-1962
	New 5 million lb./year fumaric acid plant at Newport, Mon.	Due for completion in 1962
	Progressive increase of polythene capacity at Fawley, from present 17,000 tons to more than 25,000 tons/year	Due for final completion by 1963
Moscrop, Thomas, & Co. Ltd.	New plant at Nuneaton for Lion motor and industrial oils and greases, paints and chemicals	Operative September 1961
Murgatroyd's Salt & Chemical Co. Ltd.	£1.5 million extension for production of chlorine and caustic soda by installation of mercury cells powered by sodium-conductor rectifiers. Capacity raised by 50%. Project managers: D.C.L. Engineering Division. Main contractors: W. J. Fraser & Co. Ltd.; mercury cells, Uhde; rectifiers: Westinghouse	Due on stream October 1961
National Coal Board South Western Division	Plant to produce phthalic grade naphthalene at Caerphilly Tar Distillation Works using Ruetgerswerke licence. Will handle mixed feed equivalent to 27.5 tons/day of naphthalene. Main contractors: International-Carl Still Ltd.	In hand
East Midlands Division	Naphthalene up-grading plant at Avenue Works. Main contractors: International-Carl Still Ltd.	In hand
South Western Division	£1 million extension, to Aberdare Phurnacite works raises capacity by 160,000 tons to 800,000 tons/year, plus by-product plant for crude tar, coal, ammoniacal liquor and gas. Main contractors: Disticoke, Paris	Due to be commissioned late-1961
Nitrogen Fertilisers Ltd.	New ammonia synthesis plant at Flixborough, Lincs., will more than double company's overall ammonia capacity. Main contractors: Chemical Construction (G.B.) Ltd.	Due for completion end-1962
North Thames Gas Board	Naphthalene plant at Beckton. Main contractors: Chemical Engineering Wiltons Ltd.	In hand
	Pilot plant Rummel gasifier at Bromley. Main contractors: Simon-Carves Ltd.	Completed mid-1961
North Western Gas Board	£220,000 plant at Crewe to produce 2.2 m.c.f.d. of gas from primary flash distillate. Main contractors: Woodall-Duckham Construction Co. Ltd.	Due to start gas-making October 1961
	Two Onia-Gegi self-steaming cyclic-operated catalytic gas reforming plants at Ellesmere Port, using refinery gas from Shell. Capacity is 15 m.c.f.d. Main contractors: for reforming plant, Humphreys & Glasgow Ltd.	Due to be commissioned December 1961
	Conversion of Manchester plant to use Stretford liquid purification process. Main contractors: W. C. Holmes & Co. Ltd.	In hand

COMPANY	PROJECT	DATE
Northern Gas Board	Stretford liquid purification plant for complete removal of H_2S from 3 m.c.f.d. of coke oven gas at West Hartlepool. Main contractors: W. C. Holmes & Co. Ltd.	Due in production in May 1962
Orobis Ltd.	Extension to oil additives plant at Hull. Design, engineering and supply by Distillers	Due for completion autumn 1962
Oxley's, J. C., Dyes & Chemicals Ltd.	New plant for blending of gas-oil at Dewsbury. Main contractors: Blaw Knox Chemical Engineering Co. Ltd.	Completed May 1961
Pearson, William, Ltd.	New single-storey building at Hull for refining of butylated hydroxy toluene (BHT). Existing plant will be relocated in this building, improving lines of material flow.	Due in operation end-1961
Permutit Co. Ltd.	Extension to South Wales plant to increase capacity for polymer emulsions of U.B.S. Division of A. E. Staley Manufacturing Co.	In production summer 1961
Plastanol Ltd.	£30,000 extension to synthetic resin plant at Belvedere, Kent. Main contractor: Hygrotherm Engineering Ltd.	Completed early-1961
Port Talbot Chemical Co. Ltd.	First U.K. hydrorefining plant to refine coke-oven crude benzole to pure benzene. Crude capacity is 4.5 million gall./year. Contractors: Distillation section: R. & J. Dempster Ltd.; Lurgi hydro-refining unit and installation: Simor-Carves Ltd.	Completed
Price's (Bromborough) Ltd.	Extension to stearine bead capacity at Bromborough Pool, Bebington	Completed early-1961
	Fat splitting plant at Bromborough Pool, using Colgate-Emery process. Main contractors: Blaw Knox; cost is over £100,000.	Due for completion end-1961
Pure Chemicals Ltd.	New plant to make Weston Chemical Corp.'s products, including plastics additives and stabilisers for polyurethane foams, at Liverpool	Design work completed
Reichhold Chemicals Ltd.	New resin plant at Speke	In production May 1961
Revertex Ltd.	Joint venture with International Latex Corp., Del., to set up synthetic latex plant at Stallingborough. Main contractors: Blaw Knox Chemical Engineering Ltd.	In hand
Richard Thomas & Baldwins Ltd.	140 coke ovens at Newport, Mon., to carbonise 2,860 tons/day dry coal, plus tar recovery (650-700 gall./week), crude benzole (4,500-5,000 gall./week), and sulphate of ammonia (150 tons/week). Main contractors: Simon-Carves Ltd.	Due in production autumn 1961
Richardsons Chemical Manure Co. Ltd.	C.C.F. fertiliser plant at Belfast with capacity sufficient to supply all Ulster needs for some years. Main contractors: Constructors John Brown Ltd.	Due for completion in 1962
	100 tons/day sulphuric acid plant at Belfast. Main contractors: Simon-Carves Ltd.	Under construction
Sandoz Products Ltd.	New £2.5 million H.Q. at Horsforth Leeds,, includes four-storey production block with capacity of 6,000 tons/year for wetting agents, penetrating agents, detergents, fat liquors, optical brighteners, etc.	Opened June 1961
Schenectady-Midland Ltd.	Plant at Four Ashes, near Wolverhampton to produce industrial resins and coatings. Construction by Midland Tar Distillers Ltd.	Due in production early-1962
Scherer, R. P., Ltd.	Integrated capsulation installed at Slough plant	In production late-1960
Scott Bader & Co. Ltd.	Plant at Wollaston to produce vinylidene chloride emulsions; capacity said to meet U.K. needs of about 100 tons/year and to provide export surplus	Completed March 1961
Scottish Agricultural Industries Ltd.	£1.25 million expansion scheme to convert Sandilands, Aberdeen, works from superphosphates to ammonium phosphate and concentrated compounds	In hand
	£500,000 scheme to grind and market basic slag at Redbourn Works, Scunthorpe, of Richard Thomas & Baldwins Ltd.—capacity 100,000 tons/year	Completed autumn 1961
Scottish Gas Board	£6.6 million Westfield Lurgi high-pressure gasification plant. First stage capacity is 15 m.c.f.d.; 2nd stage will be 30 m.c.f.d. Main contractors: Humphreys & Glasgow Ltd.	Due for final completion by late-1961
	£300,000 refinery gas reforming plant of Onia-Gegi self-steaming type at Granton Edinburgh. Max. capacity 18 m.c.f.d. Main contractors: Humphreys & Glasgow Ltd.	Due for completion end-1962

COMPANY	PROJECT	DATE
Scottish Tar Distillers Ltd.	Extension to Falkirk plant for extraction and refining of naphthalene. Main contractors: Chemical Engineering Wiltons Ltd.	Commissioned early-1961
	Extension to tar acids refining plant. Main contractors: Chemical Engineering Wiltons Ltd.	
Shell Chemical Co. Ltd.	Modernisation of Carrington No. 1 ethylene plant. Main contractors: Lummus Co.	Due for completion by mid-1962
	No. 2 ethylene unit at Carrington to produce 55,000 t.p.a. from straight-run naphtha. Main contractors: Kellogg International Corporation Ltd.	On stream 1961
	Polyolefins plant at Carrington for production of 30,000 tons/year of high and low pressure polythene and polypropylene. Main contractors: Matthew Hall & Co. Ltd., & George Wimpey & Co. Ltd.	Due on stream end-1961
	Plant at Carrington for polydiene rubbers with capacity "as large as any polydiene plant in world," using Ziegler catalysts, Goodrich manufacturing & marketing licence.	Due for completion early-1963
	450 tons/day sulphuric acid concentration plant. Main contractors: Simon-Carves Ltd.	In production
Shell Refining Co. Ltd.	New paraffin and microcrystalline wax plant at Stanlow. Main contractors: Stone & Webster Engineering Ltd.	In hand
Shelton Iron & Steel Co. Ltd.	Continuous benzole de-fronting unit. Process and contractors: A.P.V.	For completion in 4th-quarter 1961
South Durham Steel & Iron Co. Ltd.	Three batteries of Gibbons-Wilputte coke-ovens of 26 ovens each, plus coal and coke handling and by-products recovery facilities with total carbonising capacity of 12,400 tons/week of coal. Products are coke, tar, ammonium sulphate, crude benzole and gas for integrated steel plant. Main contractors: Gibbons Bros. Ltd.	1st battery commissioned August 1960; 2nd April 1961; 3rd September, 1961
South Eastern Gas Board	Plant for recovery of crude tar acids (600,000 gall./year) and crude tar bases (30,000 gall./year) from napthas and creosote oils at Greenwich Works. Main contractors: Whessoe Ltd.	Completed end-1960
South Western Gas Board	Sulphur extractor plant at Exeter (8 m.c.f.d.) with dry contact sulphuric acid plant by Power-Gas Corp. Ltd. Main contractors: Henry Balfour & Co. Ltd.	Completed early-1961
South Western Tar Distillers Ltd.	3,000-4,000 tons/year phthalic anhydride plant at Totton, Southampton. Costing some £400,000 and constructed with Saint-Gobain, Paris	Completed end-1960
Southern Gas Board	Extension of conc. ammonia plant for treatment of 750 gall./hr. of crude ammoniacal liquor at Portsmouth Gasworks. Main contractors: Simon-Carves Ltd. and F.C. Construction Co.	Commissioned February 1961
	Extension at Portsmouth to produce town gas from light distillate in Onia-Gegi catalytic reforming plant; capacity 2.7 million c.f.d. Main contractors: Humphreys & Glasgow Ltd.	Commissioned January 1961
	Extension of Poole plant for dehydration of town gas by calcium chloride solution with max. capacity of 1.5 million c.f.d. Main contractors: Simon-Carves Ltd. and F.C. Construction Co.	Due for completion in November 1961
	Extension at Southampton of four 100 p.s.i.g. town gas compressors each giving 250,000 c.f.h. Main contractors: Bryan Donkin Co. and Blackstone Co.	Due for completion in December 1961
	New plant at Southampton to produce conc. ammoniacal liquor from 750 gall./hr. of crude liquor. Main contractor: Simon-Carves Ltd.	Completed June 1961
	New virgin naphtha storage and pump plant for gas production on CWG and Segas catalytic reforming plant; 500,000 gall. storage and 36,000 gall./day max. usage. Main contractors: Power-Gas Corporation and Oxley Engineering Co. Ltd.	Completed July 1961
	New Southampton plant for dehydration of h.p. town gas refrigeration—12 million c.f.d. Main contractor: W. C. Holmes & Co. Ltd.	Due for completion in November 1961
Starch Products Ltd.	Plant at Camelon, Falkirk, to produce adhesives, dextrines, starch and starch derivatives	In hand

COMPANY	PROJECT	DATE
Steetley Co. Ltd.	£3 million extension to sea-water magnesia plant at Hartlepool	Due for completion early-1962
Sto-Chem Ltd.	£1 million plant in Midlands to produce 8 million lb./year synthetic rubber latices. Main contractors: Matthew Hall & Co. Ltd.	For completion autumn-1961
Stuart, D. A., Oil Co. Ltd.	Sulphochlorination plant for cutting oils concentrates at Wolverhampton	Opened July 1961
Styrene Co-Polymers Ltd.	Stage 2 of expansion programme, raising capacity of alkyd, epoxy and acrylic resins	Completed
	Stage 3 of expansion programme for extension of drum filling facilities and three-storey building. Main contractors: J. Gerrard & Sons	In hand
Thompson & Capper Ltd.	Extension to Speke tabletting plant for pharmaceutical and general industry. Main contractors: Worthington (Contractors) Ltd.	Completed late-1960
Uclaf Ltd.	High-purity silicon plant at Stratford using Pechiney process	Completed
United Coke & Chemical Co. Ltd.	Distillation plant to defront and to produce BTX and indene rich fractions from blended crude benzoles and light oil at Orgreave. Process and contractors: A.P.V.	For completion early-1962
	Coke-oven plant at Brookhirst—25 ovens and complete by-product plant. Main contractors: Simon-Carves Ltd.	Under construction
U.K. Atomic Energy Authority	Second primary separation plant to service fuel elements at Windscale. Main contractors: Mitchell Construction Co. Ltd.	Due for completion in 1963
Upjohn Ltd.	£725,000 extension to Crawley plant for antibiotics, steroids, etc. Main contractors: Y. J. Lovell (Sussex) Ltd.	Due in full production end-1962
Vinatex Ltd.	Factory for manufacture of Vinatex vinyl compounds; Vinatex p.v.c. pastes and Vinatex p.v.c. sintering powders at New Lane, Havant, Hants	In full production November 1960
Wales Gas Board	Carburetted water gas plant with capacity of 3 million cu. ft./day at Wrexham. Main contractors: Power-Gas Corporation Ltd.	Due in operation November 1961
Walker Chemical Co. Ltd.	Plants at Bury and Bolton to make new chemicals and to extend existing units	Completed
Warner Lambert (Ireland) Ltd.	£50,000 pharmaceutical factory in Dublin	Opened July 1961
Watford Chemical Co. Ltd.	New plant at Copperfield Road, London, E.3 to produce tetrahydroxyadipic acid	Commissioned June 1961
	New plant to produce p.v.c. stabilisers	Commissioned August 1961
	New plant for plasticisers and various fine chemicals	Due for commissioning end-1961
West Midlands Gas Board	£6.5 million 40 m.c.f.d. high-pressure gasification plant at Coleshill, inc. tonnage oxygen units, Lurgi plant and plants for by-products, gas treatment, enrichment, etc. There will be room for expansion up to a total capacity of 120 m.c.f.d. Main contractors: Woodall Duckham Construction Co. Ltd.	Due in full production in 1963
	LPG reforming plant at Nechells. Main contractors: Simon-Carves Ltd.	In hand
	Chemico catalytic carbon monoxide removal plant for town gas. Main contractors: Chemical Construction (G.B.) Ltd. and Whessoe Ltd.	Completed
Whiffen & Sons Ltd.	New plant at Loughborough for production of 350 tons/year each of cyanuric acid and trichloroisocyanuric acid. Initial cost is estimated at £100,000	Due for completion early-1962
Wilkinson, James & Sons Ltd.	Hydrofluoric acid plant at Sheffield to produce 'substantial' tonnages	On stream early-1961

PROJECT PROGRESS 1961

A.P.V. Contracts Range from Silicones to Aromatics

THE Chemical Engineering Division of the **A.P.V. Co. Ltd.**, Crawley, Sussex, is handling the design and construction of a number of important plants for the benzole refining, petrochemical and other industries, the processes used in many instances being those developed by A.P.V. themselves. Current projects include the following:

Courtaulds Ltd. Aromatics condensate separation unit to produce nitration grades of benzene and toluene, and 3° xylene, at British Celanese Ltd.'s chemical works at Spondon; also cyclopentadiene recovery unit of British Celanese design. To be commissioned autumn 1961.

Bitmac Ltd. Benzole refinery to process 8 million gall./year of coke oven benzole to produce high purity benzene, toluene, 3° xylene and an indene rich fraction at Richard, Thomas and Baldwin's Ltd.'s Spencer works in South Wales. Incorporates new A.P.V. pulsed column acid washing units. To be commissioned spring 1962.

Hickson and Welch Ltd. Plant to separate pure ortho-nitrotoluene from crude mono-nitrotoluene, at Castleford. Completion, autumn 1961.

British Hydrocarbon Chemicals Ltd. General purpose batch still to separate certain by-product streams into specified fractions at Grangemouth. Completion, autumn 1961. Another A.P.V. order is for copper distillation columns, heat exchangers and other process vessels for the methanol plant now being constructed by Chemical Construction Co. (G.B.) Ltd. at Grangemouth. This uses a Chemico process.

United Coke and Chemical Co. Ltd. Distillation plant to defront and to produce BTX and indene rich fractions from blended crude benzoles and light oil at Orgreave. Completion, early 1962.

Shelton Iron and Steel Co. Ltd. Continuous benzole defronting unit. Completion, fourth-quarter 1961.

Ciba Laboratories Ltd. Pulsed column liquid/liquid extraction unit. Commissioning, fourth-quarter 1961.

Other recent A.P.V. contracts included the supply of distillation and other equipment for I.C.I. Nobel Division's silicones plant extension at Ardeer (now operating), as described in previous issues of CHEMICAL AGE.

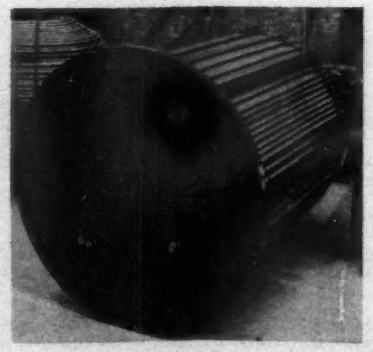
Capper Produce Special-design Heat Exchanger for D.C.L.

MANUFACTURE of a heat exchanger to the special design of the Distillers Co. is among the recent activities of **William H. Capper and Co. Ltd.**, Forward Works, Woolston, Warrington, two such units having been delivered this year to the Treforest works of the D.C.L. Chemical Division, where they are used in the manufacture of carbon dioxide.

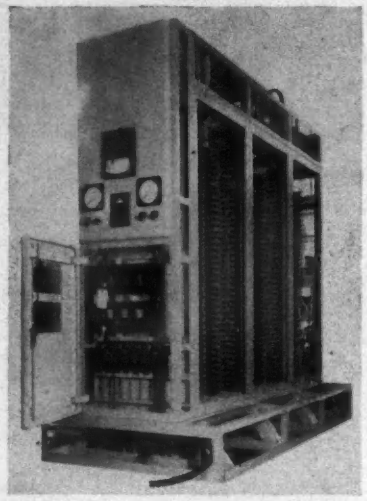
The purpose of this heat exchanger was to heat, by employing waste steam, a quantity of highly corrosive chemical fluid. The tubes were to be subjected to a pressure of 45 p.s.i. at 275°F under normal working conditions. The overall length of the exchanger was 7 ft. 7 in., shell diameter 5 ft. 2 in., and into this confined space a total of 8,000 ft. of tube was nested to give 2,000 super ft. of heating surface. Some 560 stainless steel (F.D.P.-Ti stabilised) tubes were cut and bent to form hairpins of 20 differing lengths, the inner rows of small radius bends were annealed after bending and before assembly.

The single tube plate was cut and machined from boiler quality steel to B.S.S. 1500, finishing 2½ in. thick, trepanned on face. Tube holes were recessed, tapered and drilled 1.010 in. dia. to allow for ovality of tubes. The tube ends were first expanded in and tested to 90 p.s.i. hydraulic. The joints were then completed by seal welding with one pass of 25Cr/20Ni filler rod 16 s.w.g. at 70 amp. with shielded arc argon torch to give a Vickers hardness between 146 and 167.

After welding the bundle was subjected to a further air test to 45 p.s.i. and inspection throughout by Vulcan Boiler and General Insurance Co. Ltd.



Heat exchanger bundle, part of a unit produced by William H. Capper for D.C.L.



Believed to be the first silicon rectifier equipment to be installed in India is this Westinghouse unit for Travancore-Cochin Chemicals Ltd.

Westinghouse Rectifier Units for Home and Overseas Chemical Plants

COMPLETE rectifier and transformer equipments have been supplied to a number of chemical plants by the **Westinghouse Brake and Signal Co. Ltd.**, 82 York Way, King's Cross, London N.1, during the past 12-18 months. These include:

Travancore-Cochin Chemical Co. Ltd., India (chlorine plant). The silicon rectifier equipment installed for this company, capacity 3.3 Mw, is believed to be the first silicon power rectifier to be installed in India. Commissioned December 1960.

Makhetshim, Israel (chlorine plant). Rectifier equipment providing 12,000 amp. at a maximum of 120 v., D.C. Commissioned January 1961.

Monsanto Chemicals Ltd., South Wales (chlorine plant). This installation of rectifier equipment (12,000 amp. at max. 110 v., D.C.) is claimed as a good example of an existing mercury arc rectifier being directly replaced by a silicon rectifier. Existing rectifier transformers were kept and a regulating transformer added. At present being commissioned.

Murgatroyd's Salt and Chemical Co. Ltd., Sandbach, Ches. (chlorine plant). Rectifier plant installed and at present being commissioned will provide an output of 10 Mw. at 200 v., D.C., and the rectifier section is split into four cubicles. Each cubicle is thus rated at 12,500 amp. and is complete with protection relays and metering.

Unilever, Ceylon (hydrogen plant). Rectifier equipment provides 4,500 amp. at a maximum of 54 v., D.C. At present being commissioned.

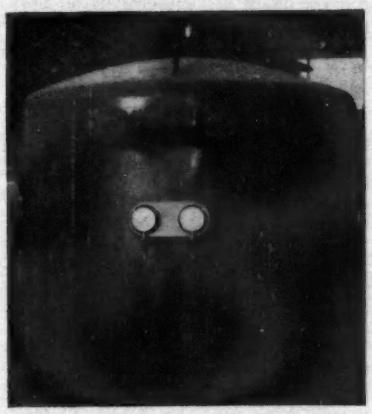
Kuwait Power Co., Kuwait (chlorine production, the product being used for the chlorination of desalinated sea water). Rectifier equipment for 25,000 amp. at max. 40 v., D.C. To be commissioned shortly.

Corrosion-resistant Floor for Kodak Factory

AN interesting order is reported by **Semtex Ltd.**, 19-20 Berners Street, London W.1, who are supplying and laying some 2,700 sq. yd. of corrosion resistant flooring to the ground, first and second floors of Kodak's powder and solutions factory at Liverpool. The specification comprises ¾ in. thick red ceramic tiles, fully bedded and jointed in Semtex GP cement, laid on a Rhepanol ORG membrane. The tiling is being carried to a height of 12 in. up the vertical surface around the perimeter of each room and is being continued up and over machine bases.

The entire specification has been devised to withstand all chemical conditions prevailing in this section of the photographic industry.

Pressure Filter



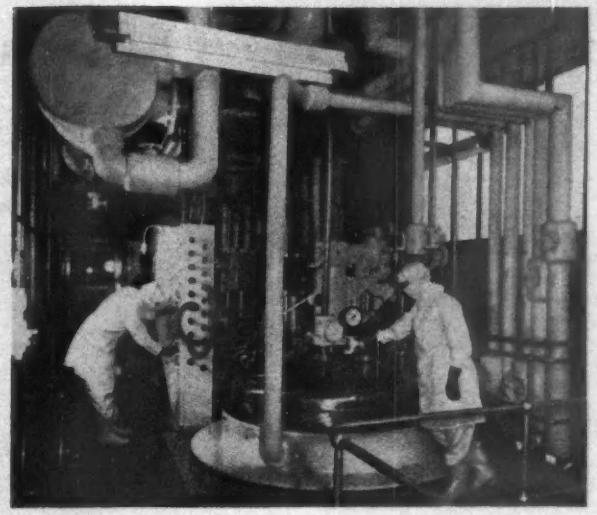
Pressure filter, 7 ft. 6 in. dia. and 7 ft. high, fabricated by R. White and Sons (Engineers) Ltd., Widnes, Lancs, who are shortly extending their fabricating department to accommodate larger vessels and offer quicker deliveries

British Oxygen Busy on Industrial Gas Contracts

PLANTS for the steel, gas and chemical industries for the production of industrial gases—the chief ones being tonnage oxygen and tonnage nitrogen—are manufactured by the **British Oxygen Co. Ltd.**, Bridgewater House, Cleveland Row, St. James's, London S.W.1. Current U.K. contracts include oxygen and nitrogen plants for supplying: Scottish Gas Board (Westfield), Imperial Chemical Industries (Wilton), Richard Thomas & Baldwins Ltd. (Spencer Works, Newport, and Redbourn), Appleby Frodingham Steel Co. (Scunthorpe), Steel Company of Wales (Port Talbot), Stewarts and Lloyds (Corby), Colvilles Ltd. (Ravenscraig), Steel Peech and Tozer (Rotherham), Consett Iron Co. (Consett), South Durham Iron and Steel (West Hartlepool).

Contracts are in hand for installation of plants for the following overseas clients: Tisco (Jamshedpur, India), East India Distilleries Ltd. (Madras), Fertilisers and Chemicals (Travencore).

Antibiotics Plant Extensions for Distillers Co. (Biochemicals)



This view of two crystallisers in the new Distillers Co. (Biochemicals) Ltd. plant shows the use of a pipe connection panel. This system greatly simplifies pipe layouts and makes effective sterilisation possible

A CRYSTALLISATION unit which introduces a number of new automatic techniques for the processing of antibiotics is part of the £500,000 plant extension and research facilities of **Distillers Co. (Biochemicals) Ltd.** at Liverpool (CHEMICAL AGE, 15 July 1961). Also part of the extension is an extraction plant and a new pharmacological research laboratory. These new installations increase the company's research facilities and provide handling procedures which can be developed specifically for antibiotic processes. Main contractors of the plant, which was completed in June 1961, were Sir Alfred McAlpine and Son Ltd. and the D.C.L. Engineering Division (South).

The extraction plant is designed for the production of intermediate antibiotic solutions which are then passed for automatic processing in the crystallisation building. Distillers Co. technical staff and the D.C.L. Engineering Division designed the plant with the primary object of crystallising the antibiotics and processing them by automatic equipment to produce sterile, pure antibiotics ready for filling into small vials. At no stage are the antibiotics exposed to contamination.

The pharmacological research laboratory has increased Distillers' facilities for screening new substances, including synthetic drugs, and testing existing products. It also has a special section for dealing with radioactive tracer techniques.

Dunlop Rubber Linings for Pickle Processes, Steel Works Acid Plants

SEVERAL contracts involving the rubber lining of chemical plant have been completed or are in hand by the **Dunlop Rubber Co. Ltd.**, 10-12 King Street, London S.W.1.

One was for the rubber lining of a 378 ft. long pickle line at the new Colville plant at Gartcosh. This included the lining of fume duct covers and involved the laying of approximately 14,000 sq. ft. of rubber lining. The work was completed in July 1960.

The second of the Zahn acid recovery units has been lined for Edward Curran at the Spencer works of Richard Thomas and Baldwins. Several of these units have been programmed and the total square footage of rubber for each is approximately 10,000 sq. ft., of which roughly 45% is covered in the Dunlop factory and the balance on site. About to start is the rubber lining of a 403-ft.-long pickle line for Wellman Smith Owen at the Spencer works. This will involve a further 15,000 sq. ft. of rubber lining. The work is scheduled to start in October, and will take some 10-12 weeks to complete.

Two 35,000-gall. storage tanks for use in co-operation with the Zahn acid recovery units at Llanwern and at Gartcosh have been partially completed. These vessels are lined with ebonite on site.

Project Progress

Synthetic Organic Chemicals Made in Carnegie's New Extensions

SUBSTANTIAL capital investments in new technology and new products have been made by **Carnegies of Welwyn Ltd.** during the past year. The company in the past has manufactured a wide range of traditional pharmaceutical products such as quinine, theobromine, adrenaline and piperazine and, although these compounds are still being made at Welwyn, they have found, together with other firms manufacturing in the same field, that the future prospects of some of these compounds have been seriously eroded by the continuing introduction of newer drugs. Carnegies have, therefore, installed modern plant for the manufacture of new synthetic organic chemicals.

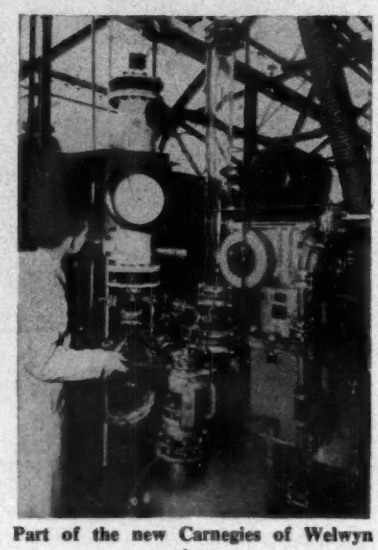
The broad policy of the company is to develop initially synthetic organics in the tonnage range of 10-100 tons/year, particularly in the fields of pharmaceutical intermediates and resin chemicals.

Most of the installation has been carried out by the company's own engineering staff. A total productive capacity of some 500 tons/year has been completed, production of the new products has begun and duplication of the new facilities is already under consideration.

When design work was begun, some 12 months ago, the exact nature of the chemicals to be manufactured was still undecided. It was therefore necessary to install general purpose plant designed to give maximum flexibility and variety of manufacture. Glass-lined and stainless steel vessels of 200 to 300 gall. capacity were selected and equipped for steam heating to temperatures up to 160-170°C and brine cooling to −10°C. All reaction vessels are fitted for total reflux and distillation operations, the vapour condensation systems being either Q.V.F. glass coil heat exchangers or Powell Duffryn carbon cartridge condensers in conjunction with Q.V.F. glass pipelines. A high vacuum distillation unit has been incorporated in which a 250 gall. glass-lined vessel operates as the still pot. Nitrogen purge equipment is installed in this unit together with vacuum facilities which allow distillation to be carried out at 5-10 mm. mercury and temperatures up to 160-170°C. A stainless steel pressure vessel operating at 1,100 p.s.i. and 240-250°C is also available.

Solid product isolation is effected by means of hydrogen extractors, followed by tray drying in vacuum or atmospheric drying ovens. Milling, blending and granulating equipment has been installed in an annexe to the main production building.

The production area has been equipped with an adequate fume and dust extraction unit and flameproof electrical equipment has been installed throughout.



Part of the new Carnegies of Welwyn plant

Production has already begun on phenyl acetic acid, benzyl cyanide and β-ethoxy propionitrile and work has been undertaken on a number of confidential special products for specific customers. The resin chemicals include the alkyl ethers of trimethylol propane and glycerol (for use in polyesters), and the manufacture of tetrahydrophthalic anhydride is planned. Again special customer manufacture is being undertaken and will, it is anticipated, continue.

Evans Medical Expand Branch Premises

A POLICY of expansion is currently being carried out at a number of the branches of **Evans Medical Ltd.** An extension to the present buildings of Evans Medical (Wales) Ltd. at Swansea which will add 4,500 sq. ft. is under construction by Griffith Davies and Co. Ltd. of Swansea. The work, which also involves the replanning of the internal layout is to be completed by November of this year.

Work is also being carried out this year on the alteration and extension of new premises bought by Evans Medical (Northern) Ltd. at Gateshead. The contractors in this instance are Alex Watson (Builders) Ltd., of Newcastle upon Tyne.

Not previously announced is the adaptation of new premises recently acquired for the Heywood branch of Evans Medical. The contractors are Wm. Towson and Sons Ltd. of Bolton, and the alterations are expected to be completed by December.

G.E.C. Control Centres in Chemical Plants

EXTENSIVE use of electrical methods of automatic process control in the chemical industry has during the past two years led to orders totalling £380,000 for the motor control centres manufactured by the **General Electric Co. Ltd.**, Erith, Kent. These include installations in a polythene plant of the Union Carbide Corporation at Altona, Australia; a plant at Fawley forming the second petrochemical project of Esso Petroleum Co. Ltd., and a general intermediary chemical plant of Petrochemicals Ltd., near Manchester, as well as heavy industrial applications.

The G.E.C. motor control centres are designed for voltages up to 550 and are available in either single or double fronted patterns. They are built on the unit construction principle to accommodate withdrawable types of starters and reversers from ½-50 h.p. and switch fuses up to 200 amp.

Large-capacity Synthetic Rubber Dryers Ordered from L. A. Mitchell

FOR India's first synthetic rubber plant—for Synthetics and Chemicals Ltd., Uttar Pradesh—a contract for the supply of two large synthetic rubber dryers has been awarded to **L. A. Mitchell Ltd.**, 37 Peter Street, Manchester 2, by the Lummus Co. Ltd., London. It is understood that this contract is to be increased by one further dryer in the immediate future. Because of exchange difficulties these dryers will, for the most part, be constructed under Mitchell's supervision in India.

The dryers are being supplied by Mitchell under a licence agreement they have with the C. G. Sargent Son's Corporation, Graniteville, Mass., prominent U.S. designers and suppliers of synthetic rubber dryers.

Each of the dryers for India will have a capacity of 4,000-4,500 lb./hr. of dry SBR type rubber. The dryers are of the straight through, single apron type, with closed recirculation in multiple sections. Special features are incorporated for material feed and removal from the dryer apron.

Other recent orders acquired by Mitchell as licensees for the Sargent's plants have been for two petrochemical schemes in France and one in Mexico, in addition to the large installations already operated by the International Synthetic Rubber Co. Ltd. at Hythe, near Southampton, where Mitchell have installed five three-apron dryers.

Varied Contracts for Simon-Carves

THE Simon Engineering Group company, **Simon-Carves Ltd.**, Cheadle Heath, Stockport, have numerous contracts in hand and those recently completed include the biological effluent treatment unit for Texas Instruments at Bedford. Work has started on a similar project for the International Nickel Co. (Mond) Ltd.

The 50 tons/day sulphuric acid plant for the Farmers Co. Ltd. at Brigg, and the naphthalene refinery for Lancashire Tar Distillers Ltd. are now in production.

Several sulphuric acid installations are in hand in the U.K. and overseas, the largest being a 300 tons/day unit for Laporte Titanium Ltd. at Grimsby and 200 tons/day units for W. and H. M. Goulding, Dublin, and Eerste Nederlandsche Co-operative Kunstmestfabriek.

Fertiliser factories under construction include an extension to the Marine works, Cork, of W. and H. M. Goulding, which is nearing completion, and a complete compound unit for East India Distilleries and Sugar Factories.

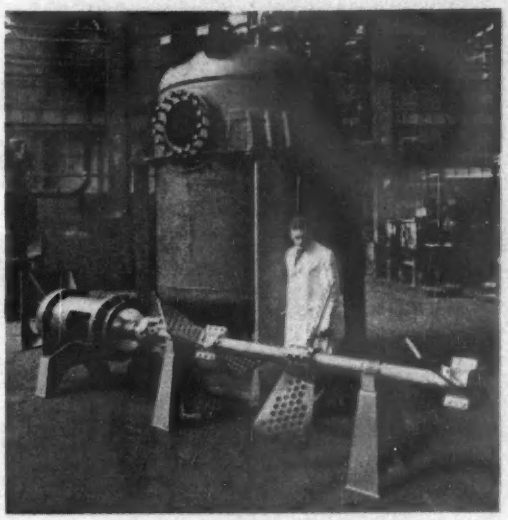
Moritz Orders Include Fertiliser, Plastics Plant

FIRST plant of its kind in India will be a compound granulated fertiliser plant with an output of 5 tons/hr. Plant is being supplied by **Moritz Chemical Engineering Co. Ltd.**, Thames Side, Kingston-on-Thames, Surrey. For large plants, Moritz use the basic designs of their French parent company—whose achievements include, for instance, erection of the world's largest superphosphate plant in Prahovo, Yugoslavia, with an output of 1,700 tons/day of superphosphate.

In the U.K. Moritz have designed and are supplying and erecting feed equipment for basic materials used in the manufacture of rigid foam components (isocyanate/resin composition) involving stringent temperature controls, silica gel blanketing, etc., which will be the first to be used in the U.K.

As a further example of their activities, Moritz have supplied and erected plant for a large asbestos company involving the heaviest type of pressure vessels, construction being in ¾ in. plate, for 150 p.s.i. pressure, complete with heavy-duty turbo-agitators.

One of four 20-ton jacketed autoclaves made by G. A. Harvey for Howards of Ilford Ltd. for use in a high pressure hydrogenation process



Special High Pressure Vessels for Hydrogenation Process

MANUFACTURE of four h.p. autoclaves for Howards of Ilford Ltd., where they will be used in a high pressure hydrogenation process, is among the recent activities of **G. A. Harvey and Co. (London) Ltd.**, Greenwich Metal Works, London S.E.7. Each autoclave weighs 20 tons, the shell being of 1½ in. stainless clad steel and the cladding to F.M.B. specification. Of 6 ft. inside diameter and 11 ft. high, the vessels were made to Class 1 requirements and are fully stressed relieved. The dished and flanged ends were spun in Harvey's works, on the Rotarpress machine, and on completion the shell was hydraulically tested to 825 p.s.i.

A multi-bladed impellor, also made by Harvey, is driven by a 50 h.p. motor and mixes the autoclave contents at 120 r.p.m. under a working pressure of 500 p.s.i. and temperatures up to 200°C. A Flexibox mechanical seal is fitted at the top where the impellor spindle enters.

Unique Gas Cooler is Feature of S. Durham Coking Plant

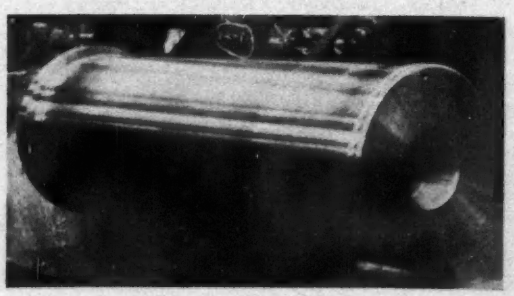
THIRD battery of coke ovens in the new coke oven and by-product plant of the South Durham Steel and Iron Co. Ltd. at Greatham, West Hartlepool, Co. Durham, was commissioned earlier this month. Main contractors for the complete three batteries and their associated facilities were **Gibbons Brothers Ltd.**, Dibdale Works, Dudley, Worcs, the plant being designed, engineered and commissioned by their Coke Oven Division at Eaglescliffe.

The three batteries each comprise 26 Gibbons-Wilputte combination underjet coke ovens, with a total carbonising capacity of 12,400 tons/week of coal, and the plant also includes coal and coke handling and by-products recovery facilities.

The by-product plant is designed for semi-direct recovery of ammonia in the form of ammonium sulphate. The plant consists of primary gas coolers, exhausters, detarrers, sulphate plant, final gas cooler, benzole scrubbers and other benzole plant, together with associated services. Unique features include the final gas cooler which is of the Gibbons-Wilputte direct spray type, without hurdles or packing, and of a design which has been developed and applied in the U.S. for a number of years.

Sub-contractors for the Greatham plant included: Geo. Royston and Son Ltd. (ammonium sulphate plant), Whessoe Ltd. (detarrers), and Newton Chambers Ltd. (benzole plant and primary gas coolers).

Forging of High Pressure Vessels



An example of the work of Hadfields Ltd., East Hecla Works, Sheffield 9, who are engaged in the manufacture of forged vessels for very high pressures, is this composite vessel for production of high pressure polythene (photo by courtesy, Union Carbide Ltd.)

Project Progress

Kestner Cope with Orders for Standard and Special Items

ALL departments have been fully occupied both for standard equipment and for special customer-built designs, report the **Kestner Evaporator and Engineering Co. Ltd.**, 5 Grosvenor Gardens, London S.W.1. Examples of the company's recent activities are:

Evaporators. Special duty evaporators contracts in hand include acid evaporators for titanium oxide plant, one in the U.K. and three in Canada; acid evaporators for spin bath liquor, one in Venezuela and one in India; low temperature high vacuum evaporator for manufacture of soluble tea powder in Uganda. Also in hand is a continuous distillation climbing film evaporator working at a boiling point of 200°C and heated by a fluid heat transmission system (Dowtherm).

Special Process Plant. A plant has been installed in India for the processing of crude limestone to high quality precipitated chalk. The process consists of calcining limestone to produce CO_2 and CaO. The CO_2 is scrubbed and washed free from impurities, while the CaO from the base of the kiln is screened, slaked with water, passed through a classifier and finally passed into a reaction chamber using a number or centrifugal serrated disc atomisers.

The CO_2 from the lime kiln is also passed through the reaction chamber and inter-reaction between the gas and the lime slurry results in the formation of a very high quality precipitated chalk. Finally, the product is dried on a Kestner drier. The output of the plant is approximately 2,000 tons/year.

Acid Pumps. A number of new chemical factories have specified Kestner's Keebush and Tantiron vertical glandless acid pumps and the following orders obtained in 1961 include 130 pumps for a rayon factory, 74 pumps for a Canadian heavy chemicals factory, 60 pumps for a South African heavy chemicals factory, and 20 pumps for an Australian heavy chemicals factory.

Process Heating. Fluid heat transmission systems have been supplied to various industries for high temperature process working including bitumen melting, heating of resin kettles, printing rolls and pharmaceuticals. The new Isoductive heating system has been successfully employed on a number of plants for recovery of dirty solvents.

Acid Recovery and Pickling Plant. In addition to orders for Kestner Fakler plants in the steel industry the company has under construction a complete pickling plant and recovery system utilising the new low vacuum crystalliser. An evaporative recovery plant for waste hydrochloric has also been completed. This is made with all contact parts in Keebush and the heating surfaces in graphite. A Keebush fractionating column is included so as to recover HCl at 15/18% concentration and the yield of ferrous chloride tetrahydrate crystals is approximately 5 cwt./hr.

Keebush fractionating column by Kestner—part of an acid recovery plant

A.E.I. Equipment for Petrochemical Plants

NUMEROUS contracts for the chemical industry at home and overseas are reported by the Motor and Control Gear Division of **Associated Electrical Industries Ltd.**, Crown House, Aldwych, London W.C.2. From Fluor Engineering and Construction Co. has come business valued at £23,800 covering 30 flameproof squirrel cage motors for British Hydrocarbon Chemicals' new butadiene plant at Grangemouth, while a separate order from Chemical Construction Co. (G.B.) Ltd. is for 32 motors for a second plant —to produce methanol—associated with the B.H.C. expansion. Large numbers of flameproof motors previously supplied by A.E.I. are in operation at Grangemouth.

Orders have been received and executed for more than 150 type K.F.B. flameproof motors from Constructors John Brown Ltd. on behalf of I.C.I. Heavy Organic Chemicals Division for a new polythene plant at Wilton. Also for the Heavy Organic Chemicals, but ordered direct, A.E.I. are supplying over 60 flameproof and industrial motors for the first phase (ethylene oxide and ethylene glycol) of the new Severnside petrochemical project.

For Fisons' £1 million fertiliser factory extension at Immingham, A.E.I. will supply 23 induction motors from 5-120 h.p. Orders for 27 A.E.I. squirrel cage motors have been received from the National Smelting Co. for use at their Swansea Vale works, these machines having special epoxy treatment for the severe corrosive atmosphere in ferrous-sulphate, sulphuric acid and ammonia plant in which they are situated. Altogther, A.E.I. have supplied for this project over 150 motors, value £35,000.

Export orders received by A.E.I. include one from I.C.I. for three 50 h.p flameproof squirrel cage motors for the new plastics plant in Denmark, and numerous orders from elsewhere.

Mechanical Draught Cooling Towers for Chemical Industry

A CONSIDERABLE volume of business in mechanical draught cooling towers for the chemical industry is reported by **Film Cooling Towers (1925) Ltd.**, Chancery House, Parkshot, Richmond, Surrey. Contracts at present on hand include, for Nitrogen Fertilizers Ltd., Scunthorpe, Lincs., a large induced draught cooling tower to handle 240,000 g.p.h. for plant extension, and for the Witco Chemical Co. Ltd., Droitwich, Worcs., a single cell tower for process cooling water also for a plant extension. Price's (Bromborough) Ltd. have ordered two induced draught water cooling towers, and Midland Tar Distillers Ltd., Four Ashes, near Wolverhampton, have made a repeat order for an induced draught tower for a plant extension.

For Murgatroyd's Salt and Chemical Co. Ltd., Sandbach, Cheshire, Film Cooling Towers are supplying a large induced draught cooling tower for process water and a small tower for hydrogen compressors. For Alderson Chemicals Ltd., Braunston, Rugby, the order is for a single cell tower for process cooling water. Through Simon-Carves Ltd., Stockport, Cheshire, has come an order for a large induced draught cooling tower for turbo alternator and acid plant cooling water for a fertiliser factory in Egypt.

Further orders on hand include: Leicester, Lovell and Co. Ltd., Southampton—large cooling tower for process water; Ambrosia Ltd., Lifton, Devon—twin cell cooling tower on gantry for plant extension; and the Distillers Co. Ltd., Chemical Division, Carshalton, Surrey—large induced draught cooling tower on gantry.

Project Progress

Courtaulds Go Ahead with Nylon, Chloracetic Acid Projects

HAVING acquired the Snia Viscosa rights for the production of caprolactam in July 1960, **Courtaulds Ltd.** made the expected announcement that they were to proceed with plans for the manufacture of caprolactam and nylon-6 polymer in June of this year (CHEMICAL AGE, 10 June, p. 924). One of the two companies to announce nylon-6 production plans at the same time, Courtaulds are constructing a plant with a capacity of 10,000 tons of caprolactam a year. From this could be made some 20 million lb. of nylon-6 polymer—about one-third of the present U.K. nylon capacity.

Another field in which Courtaulds are to be pioneer producers is that of monochloracetic acid and sodium monochloracetate. In April 1961 (C.A., 22 April, p. 651) they announced plans to produce these chemicals at the Spondon factory of **British Celanese Ltd.** The process used is a continuous one capable of giving high yields. Capacity was not announced, but it was said to be sufficient to meet foreseeable U.K. requirements of both chemicals and to enable the company to enter the export markets.

Designed and erected by the Chemical Engineering Division of the A.P.V. Co. is the new aromatics condensation separation unit, due on stream immediately, of British Celanese Ltd. As well as producing nitration grade benzene and toluene, and 3° xylene, the new plant will incorporate a recovery unit for cyclopentadiene, operating according to a British Celanese process design.

Courtaulds' overseas transactions during the past year have included a contract worth £2 million signed with Polimex, Polish Export and Import Co. for Machines Ltd. of Warsaw (C.A., 22 July, p. 125). Under the agreement, **Procindus Ltd.**, a wholly-owned subsidiary of Courtaulds, will supply know-how, plant and machinery for an acrylic fibre factory at Lodz in Poland. Deliveries are to be made in 1963.

Other large overseas contracts signed by Courtaulds in recent years have included an acetate yarn plant for the U.S.S.R. to the value of £4 million in 1958, plants for viscose tyre cords, acrylic fibre and acetate yarn also to the U.S.S.R., valued at £15 million, in 1959, and in 1960, an acrylic fibre plant worth £2 million to Yugoslavia.

Berk Engineers Design Europe's Largest Bulk Molten Sulphur Tank

A MOLTEN sulphur storage tank at the Abbey Mills, Stratford, E.15, of **F. W. Berk and Co. Ltd.**, brought into use in November 1960, is claimed to be the largest of its kind in Europe. It has a capacity of 1,000 tons and was designed by the company's engineers. The tank, 30 ft. high and 30 ft. dia., stands on a reinforced concrete platform which, because of the unstable subsoil, is supported by six concrete piles. The temperature is maintained at 260-300°F by steam coils and special precautions are taken to reduce condensation, which would create corrosive acidic conditions. The primary purpose of the tank is to enable Berk to make regular road-tanker deliveries of molten sulphur, although incoming supplies fluctuate according to the level of sulphur recovery at oil refineries.

Contact process sulphuric acid plant at Abbey Mills was designed and construction by F. W. Berk and Simon-Carves Ltd. The plant incorporates a modern fire-tube boiler and a four pass convertor. It was commissioned May 1961.

A shop for the fabrication of Exoberk Exothermic sleeves, etc., is under construction at Horseley Fields Chemical Works, Wolverhampton, by Berk Exothermics Ltd., but no details are available at present.

Previous reference has been made in CHEMICAL AGE (22 July, p. 126) to a plant at Drogheda, Eire, for conversion of peat into Berkoal—a substance widely used in the castings trade.

M. A. Phillips Work on Range of Problems

INDICATIVE of the wide scope of current technological developments is the fact that the chemical and chemical engineering consultants, **Dr. M. A. Phillips and Associates**, Romford, Essex, have during 1960 been engaged in sponsored research into problems ranging from the development of improved puncture repair patches to the improvement and development of animal feed proteins and their de-toxification, and design of plant for the process. Other activities included the development and field testing of new insecticides based on fluoroacetamide and on fluoroacetaanilide, and improvements in stability of high concentration vitamin A and D/protein feeds for animals and design of plant for the manufacturer.

The company has also been engaged in the design of major project plant for catalytic hydrogenation (in conjunction with a well known chemical engineering construction firm), and on the design and erection of plant for the manufacture of methyl bromide by a process newly developed in their laboratories. The development of process and plant for the manufacture of hydrogen bromide from hydrogen and bromine is a further example of the firm's activities.

Some of the chemical engineering work has been done in co-operation with their affiliate, Southern Chemical Plant Co. Ltd.

Gwynnes' Chemical Pumps Find Steady Outlets

Two large orders for Snia Viscosa in Italy, involving four 22-in. stainless steel pumps for benzoic acid plant and three similar units for an ammonium sulphate plant, both of which are to be installed in Italy, are among orders received during the past 12 months by **Gwynnes Pumps Ltd.**, 62-64 Chancellors Road, Hammersmith, London W.6. The company also have in hand, for Power-Gas Corporation, a similar order for six 14-in. stainless steel pumping units for an urea plant which Power-Gas are supplying to the U.S.S.R.

Although the majority of the pumps that Gwynnes manufacture for the chemical industry in particular are for handling circulating water rather than chemicals, there are several important exceptions. Thus, in conjunction with Hathernware Ltd., the company does manufacture a short range of single entry pumps, where all the wetted parts are manufactured in stoneware. The units are therefore suitable for dealing with corrosive acids, etc. Gwynnes also manufacture a considerable number of small standard pumping units suitable for use with caustic solution. The company finds that there is a steady demand for units of this type.

N.W.G.B. Projects Make Progress

Two new plants will be commissioned or brought into full production during 1961 by the **North Western Gas Board.** A feedstock-primary flash distillate plant is being built on the site of the existing gasworks at Crewe. It will start gas making in October and will produce gas with town gas characteristics. The main contractors of the plant, which will be capable of producing 2.2 million cu. ft. of gas per day, are Woodall-Duckham Construction Co. Ltd., London. The cost, including foundations, electricity service, etc., is approximately £220,000.

The second plant—to produce town gas-type gas from refinery gas obtained from Shell—is sited across the Union Canal from the Ellesmere Port gasworks. Several contractors are involved in the project which is to cost some £800,000. Among these are Humphreys and Glasgow Ltd., London, for the gas reforming plant, William Boby and Co. Ltd., Rickmansworth, water treatment plant, and W. C. Holmes and Co. Ltd., Huddersfield, exhausters. The plant will be capable of producing 15 million cu. ft./day of gas from refinery gas having a calorific value of approximately 1,000 B.Th.U. Commissioning is expected in December.

EQUIPMENT SURVEY

New Calmic Development Cuts Cost of Horizontal Plate Filter

COST-SAVING features have been introduced into the horizontal plate pressure type of filter manufactured by **Calmic Engineering Co. Ltd.**, Crewe, Cheshire, this unit being designed to give a very high finish to liquids which have a solids content of not exceeding 5%. This type of filter consists essentially of the filter plate body or core and the filter body itself. The unfiltered liquid is pumped into the centre of the core and thus all pressure is absorbed by this core leaving the filter body free of stress. This means that when filtering liquids at atmospheric temperature the filter body itself can be made from thin gauge material and consequently considerably cheapened. Thus Calmic have recently introduced on the market their 'G' series of filters incorporating this principle for filtering liquids in the cold state. The 'cold state' is stressed because if the liquid is heated prior to being filter then it is necessary to jacket the filter body and thus it becomes a pressure vessel and the 'E' series of filters apply.

Apart from the filter body Calmic have also streamlined other production aspects of the 'G' series filters and they now show quite a saving in first cost as compared to the 'E' series.

Calmic pressure filter with cover removed

New U.S. Rotary Filter Is Produced in U.K.

EimcoBelt filter, developed by Eimco Corporation, U.S., and shown at the Achema Exhibition this year, is being manufactured in Gateshead by **Eimco (Great Britain) Ltd.** Outstanding feature is the means of removing the filter belt from, and returning it to, the drum in the course of each revolution which results in improved discharge of the filter cake. Use of a scraper blade or an air blow is dispensed with and the belt is washed before being returned to the drum. Thus a clean filter unit is always in use, giving sustained high filtration efficiency and drastically reducing downtime for cleaning the belt.

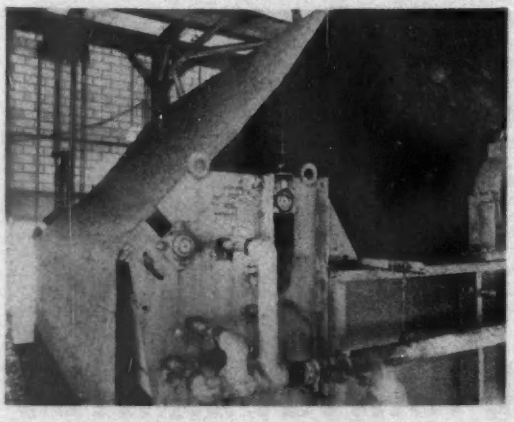
The EimcoBelt filter is made in standard sizes from 18 in. dia. by 12 in. face to 14 ft. dia. by 16 ft. face. Drastic cost savings are claimed for EimcoBelt filters installed in American plants to replace conventional filters.

P.T.F.E. as Open-web Filter Medium

Use of p.t.f.e. as an open-web filtration medium is facilitated by a development of **Richard Klinger Ltd.**, Sidcup, Kent, who undertook the further development of a fine extruded p.t.f.e. fibre produced by Du Pont and now offer .007 in. extrusion for sale in commercial quantities as monofilament for weaving. This development follows previous experience in the extrusion of Klingerflon thread seal (for pipes, fittings, etc.) and 0.18 in. monofilament.

Weaving trials have been carried out and are stated to have revealed no unsurmountable difficulties, although the very low friction is a point to be recognised. Klingers also report favourable results with initial trials concerning orientation and this could possibly increase the range of application.

Main applications appear to be in liquid/solid filtration where residue is of low concentration with large particle size, and in air or gas filtration.



EimcoBelt filter in action, showing clean cake discharge

Constant Weight Feeder for Powders

The new Sinex Minor constant weight feeder offers a solution to the problem of an accurately controlled low output rate such as is frequently encountered in the chemical and other allied industries. It is designed to feed accurately any dry powder or granular material at an output rate of 2-15 kg./hr. with an accuracy of ±1%.

The C.W.F. consists of a small buffer hopper, vibratory feeder, weighted belt assembly incorporating a high speed balance together with the necessary control circuit.

The design is such as to allow for electrical interlocking with existing units and remote starting can easily be incorporated. Manufacturers are **Sinex Engineering Co. Ltd.**

Moritz Units Cope with Dry Ball Clays

Dry ball clays, which have always presented the greatest problem, are handled by Turbo-Cleaver units supplied by **Moritz Chemical Engineering Co. Ltd.**, U.K. subsidiary of the French company, in a project for a well-known porcelain manufacturer. Moritz state that it has been proved that Turbo-Cleavers can handle both wetted and dry ball clays, giving the finest possible dispersion.

The company are continuing to improve their turbo-mixers, turbo-dispersers, turbo-emulsifiers, 'V' powder blenders, etc., keeping in step with more stringent demands in process handling.

Descaling of Graphite Heat Exchange Tubes

A development of **Vacu-Blast Ltd.**, Wellcroft Road, Slough, Bucks, is the descaling of graphite heat exchanger *in situ*, using the Vacu-Blast closed circuit system of grit-blasting. The blast nozzle from the Vacu-Blast medium machine is inserted into an extension lance which in turn is inserted into the tube; the blast is controlled to a 2-min. cycle per tube, and the grit is recovered by the vacuum integral with the machine from the collection cone.

Equipment Survey

Allis-Chalmers Compacting Process Produces High Quality Granules from Fines

THE Allis-Chalmers continuous compacting process, developed in the U.S. to provide an economical means of converting a wide variety of fines to high quality granules, is now being made available in the U.K. through **Allis-Chalmers Great Britain Ltd.**, 728 Salisbury House, London Wall, London E.C.2.

The compacting process was developed with the object of providing a means of converting previously undesirable fines to a saleable product, increasing bulk density and altering solubility rates. The equipment was designed to overcome certain drawbacks of more conventional processes, in particular to keep capital investment at a reasonable level in relation to the economics of recovery, to minimise maintenance, to be flexible enough to handle a wide variety of materials without costly preparation of the feed, to make possible the utilisation of existing equipment wherever possible, and to permit operation by semi-skilled labour.

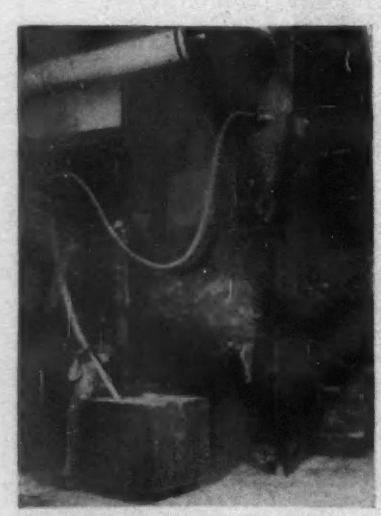
In the process, material is fed to the Compactor mill through an inverted gravity-type feed hopper. Smooth faced Compactor rolls pick up the feed and apply a rolling pressure to produce a continuous sheet extending to the full width of the rolls. As the sheet comes from the Compactor mill, it is broken into pieces to provide proper feed for the granulator. The granulator operating principle—corrugated rolls and gradual reduction—is a major factor in obtaining highest product yield. The A-C granulator may have one, two or three pairs of rolls, the number of rolls and the type of roll corrugations dependent on the final product desired.

Following the granulator, the product is screened on an Allis-Chalmers screen. Fines are recirculated to the Compactor mill, oversize to the granulator. Finished product is sent to stock or to packing.

Conveying Powders Without Dust

DUSTLESS conveying of powdered materials is claimed for a system which handles 5 cwt.-12 tons/hr. of fine chemicals in the micron or sub-micron range.

Two types of conveying systems are available; in one, an operator draws out by suction, through a flexible hose, a quantity of powdered material, which then enters a cyclone for air powder separation. The product is then unloaded through a rotary or other type of valve into a hopper or mixer. The airborne particles are separated out by the Clear-Flo filter situated above the cyclone separator, the necessary suction being created by a turbo or Roots type exhauster.



Bivac dustless pneumatic unloading plant conveying toxic oxide from a container to a mixer

In the second type of plant no labour is involved in the conveying of the material, which is dropped from a storage hopper through a rotary or similar valve into the pipeline through which a high speed stream of air passes, conveying the material to combined filters and storage hoppers. In these units the conveyed material is separated out and dropped by gravity into a further process or storage hopper. The necessary suction is again provided by a suitable exhauster.

Successful plants of this type have been provided and installed for the handling of pigmentary colours; zinc oxide; alumina; iron oxide; rice powder; flour and hydrated limestone among others. Further information is obtainable from **Bivac Air Co. Ltd.**, Marsland Street, Stockport.

Hopper Feed Unit Uses Compressed Air

A simple device that can be applied where granulated and free flowing powders and similar materials are being processed has been produced by the **Amigo Machine Co. Ltd.**, Skylon House, Park Royal Road, London N.W.10. It consists of a hopper which can be placed on the floor of any convenient point for accepting raw material from the bulk source and a large bore flexible pipe which is fed into the machine hopper, which will normally be some height from the ground and is usually on top of the machine it serves.

Operation is by compressed air working at a pressure of 60 p.s.i. It will raise to a minimum of 2 lb. from floor level to an elevation of 7 ft., capacity increasing with the air speed.

One of the advantages of this feed unit stressed by Amigo is that it prevents ingress of metallic particles that would be large enough to do damage to extrusion or similar type processing systems.

Polyurethane Foam Insulation Can be Sprayed On

In addition to their established sprayed Limpet asbestos insulation process, **J. W. Roberts Ltd.**, Horwich, Bolton, now undertake the application of rigid polyurethane foam with equipment of their own advanced design. Both processes are stated to be suitable for many applications in the chemical industry and to have excellent all-round insulating properties. They can be applied to virtually any surface, flat or irregular, in a continuous, jointless coating providing four-way insulation.

One of J. W. Roberts' operatives spraying polyurethane to form rigid foam insulation

Berk Spray Pistol Gives High Speeds

A metal spray pistol, developed to meet the need for fast spraying equipment, either to cover large areas of structural steelwork or to match in with automatic gritblasting installations, is offered by **F. W. Berk and Co. Ltd.**, Coating Division, Brent Crescent, North Circular Road, London N.W.10. The Berk 61 pistol will deposit zinc powder with a deposition efficiency as high as that obtained with a 35 lb./hr. pistol, with the same gas and air consumption, but at a rate of 110 lb./hr. This is approximately equivalent to the deposition of 0.004 in. coating over 650 sq. ft. per hour. This performance is achieved by means of the patented nozzle, which projects powder, gas and air through alternate and concentric jets. This nozzle, which can be cheaply and easily replaced, is the only part of the pistol which can require maintenance.

Equipment Survey

Special Lifting Gear is Feature of Paddle Mixer for Starch

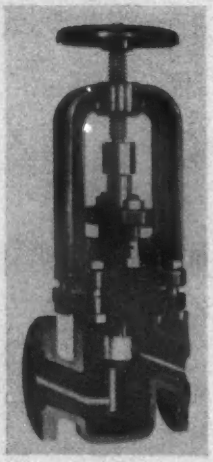
MANUFACTURE of plant for mixing, metering, storage, preheating, etc. for a variety of industries in an important activity of the recently formed Plant Department of **Plenty and Son Ltd.**, Eagle Iron Works, Newbury, Berks., a typical unit engineered there being a starch slurry unit, the first of five, which was recently despatched to Garton Sons and Co. Ltd., Battersea, London, glucose manufacturers.

The mild steel Plenty two-blade paddle mixer is driven by a 3 h.p. motor through a worm gearbox mounted above the 2,300 gallon tank. The paddles rotate at 25 r.p.m. to prevent the starch from setting. An important feature is the lifting gear, operated by winch on the outside of the tank. This controls the height of the mixing paddles inside the tank, so that they will be at the correct height to keep the slurry on the move. This lifting gear has two other great advantages—when the slurry has been left for a weekend and "settled out" the paddles can be lowered gently into the tank to mix all strata gradually. Since the paddles can rise and fall on the mixer shaft rather than the whole shaft rising with the paddles, Gartons are able to accommodate the five vats inside a building with 10 ft. headroom.

The mixer is designed to deal with 2,300 gall. in 15 min.

Bascodur-lined Valves for Corrosives Become Available in U.K.

VALVES lined with Bascodur anti-corrosive material—used for plug valves, globe valves, angle valves, low-pressure gate valves and sight flow glasses are now available in the U.K. for the first time through **I. V. Pressure Controllers Ltd.**, 683 London Road, Isleworth, Middx. Bascodur-lined valves



Cut-away view of a Bascodur lined valve

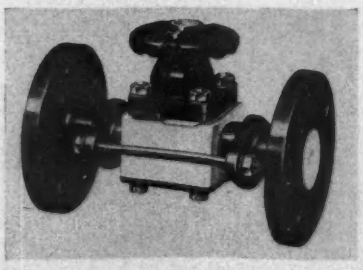
are manufactured in Germany at Eisenwerk Rodinghausen, Lendringsen Krs., Iserlohn, and have been tested and approved by Badische Anilin and Sodafabrik AG.

Bascodur is composed of a carbonaceous base agglomerated by means of a thermo-setting resin. It is highly resistant to corrosive fluids and is capable of resisting elevated temperatures. The plug, globe and angle valves are all suitable for pressures of 150 p.s.i. and temperatures up to 300°F. Globe valves are used where flow regulation does not permit the use of cocks, or when severe service conditions require tight sealing. Angle valves are similar in design and construction to globe valves, but are used for tank mounting where the space available cannot accommodate normal valves or plug valves. Bascodur low-pressure gate valves are designed for large flow capacities with low pressure loss. Standard gate valves are also suitable for use in low pressure circuits.

Saunders Valve with P.T.F.E. Body

The new Saunders ½-in. diaphragm valve type 'A' has a solid p.t.f.e. body with p.t.f.e. lined gunmetal end connections. Base plate tie bolts and body/bonnet bolts are of stainless steel, while the 214 grade p.t.f.e. faced diaphragm is a further feature. Body is of cast iron with resistant plastics coating. The valve is also made in the ¼ in. size with solid p.t.f.e. hose end connections.

Manufacturers: **Saunders Valve Co. Ltd.**, Cwmbran, Mon.



Saunders ½-in. diaphragm valve with p.t.f.e. body and p.t.f.e. lined end connections

Valves Can be Serviced and Tested in Pipeline

A range of valves which can be fully serviced and tested under pressure while still connected to the pipeline, thus avoiding shut-down, are Newman-Velan valves which are made by the **Newman, Hender Group** of companies. These are forged steel bonnetless gate or globe types, available in sizes up to 2 in.

Also being manufactured by the group is the Newman-Seaman Snap air/gas valve—a push-button controlled valve for working pressures up to 200 p.s.i., all sealing being by neoprene 'O' rings. Compact and simple in construction, they require little maintenance.

Newman, Hender are also fitting p.t.f.e. sealing faces to certain of their valves, and the company is offering Newman-Milliken lubricated, parallel plug valves fitted with p.t.f.e. sleeves.

Linatex Pinch Valves can be Motorised or Pneumatic

The Linatex range of pinch valves has been expanded to embrace motorised and pneumatically operated types. After considerable experience with the standard handwheel operated valve of ½-8 in. bore these have now also been extended to include 10 in., 12 in. and 14 in. bores. The valve is glandless and, in maintenance, it is necessary only to change the rubber sleeve to restore the valve in as-new condition.

In most cases, especially when handling abrasive slurries or powders, the sleeve is made from Linatex rubber as incorporated in Linatex pumps, pipelines and other materials handling equipment. For chemicals, sleeves are of an appropriate synthetic rubber material, e.g. butyl, nitrile, Hypalon and neoprene.

Manufacturers: **Wilkinson Rubber Linatex Ltd.**, Camberley, Surrey.

New Air-powered Filling Machine for Inflammable Liquids

The Filamatic automatic filling machine introduced some months ago by **Shandon Scientific Co. Ltd.**, 6 Cromwell Place, London S.W.7, is now available in an air-powered version specially designed for the handling of inflammable liquids. The new model, the DAA-5, is equipped with dual nozzles and has a volume range from a few drops to 8 oz. per stroke per nozzle—a maximum of 16 oz./stroke. A dual 16-oz. model is also available to special order. Filling rate is adjustable from 5 to 40 fills/min.

The DAA-5 is powered by a geared-head rotary air motor operating at 40 p.s.i., the motor being coupled to two reciprocating piston pumps. The volume dispensed by each pump can be varied by means of a graduated micrometer mechanism calibrated in 0.001 in. stages. Interchangeable pump units adapt the unit for handling free-flowing, semi-viscous or viscous liquids. All parts in contact with liquid are of stainless steel or Teflon. Interchangeable glass and plastic pump assemblies are available.

Equipment Survey

Versatile Forplex Grinding Mill Has Interchangeable Elements

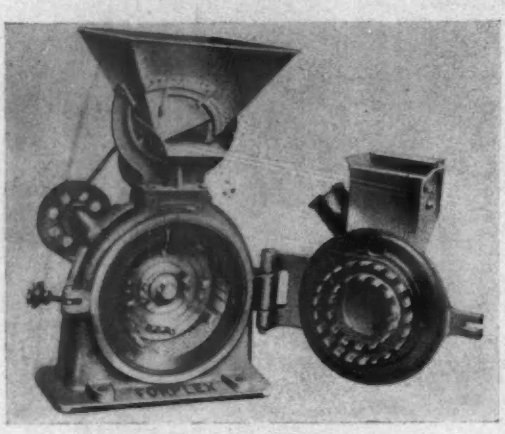
INTRODUCED by **Russell Constructions Ltd.**, Russell House, Adam Street, London W.C.2, is the Forplex mill, a versatile unit designed for the processing of materials in the soft to medium hard range. An important feature: interchangeability of the grinding elements allowing grinding of a wide range of products at various outputs. Elements can be changed over rapidly, access being through a hinged door on the face of the mill chamber.

The grinding process is performed by a rotating disc or rotor fitted with concentric hammers running between the teeth of a disc located on the floor of the mill chamber. The particles of material being ground are subjected to continuous and high frequency attrition between the high speed rotary and the static grinding element and are thrown by centrifugal force against a circular drum in the form of a screen or slotted plate which surrounds the periphery of both grinding elements.

The rotary assembly creates a draught which expels the fine particles through the screen while the coarse or partially ground material is forced back towards the axis of the mill for further breakdown. If it is required to reduce the material to below the sieve range multiple-pin, high-speed and static elements are used and the particle size can be controlled by varying the speed of rotation. This arrangements is also effective for substances which tend to clog the surrounding screen or slotted plate.

The unit is fitted with an automatic and adjustable feeder which incorporates a powerful magnet or electro-magnetic separator. The ground product is received by a take-off hopper fitted to the base of the mill chamber. Alternatively the material can be collected pneumatically.

The mill is produced in various sizes to deal with 14 lb.-5 tons/hr.



Russell Constructions' Forplex mill

Compact New Mechanical Seal Developed for High-speed Shaft Applications

FOR high-speed shaft sealing jobs where axial space is at a premium, **Flexibox Ltd.**, Nash Road, Trafford Park, Manchester 17, have developed a new mechanical seal, the type DD, which can cope with peripheral speeds up to 15,000 ft./min., pressures up to 1,000 p.s.i.g. and temperatures up to 500°F. All the components are replaceable and worn parts can either be replaced completely or reconditioned without destroying the whole seal. In addition, the overall length can be specified to close tolerances.

The complete seal unit is designed as a press fit in its housing and the smooth clean profile of the outside diameter and rubbing face ensure accurate leak-free fitting. Three variants of the basic design are available: O-ring fitted, chevron packed and 'reverse balanced' respectively.

Self-priming Pumps Handle Hot and Volatile Liquids

Suitable for handling hot or volatile liquids are regenerative type pumps, self-priming on liquid ring principle, introduced by **Precision Electrical Products (Stockport) Ltd.**, Lytham Street, Cale Green, Stockport. Each pump stage can develop about six times the head of a centrifugal pump with impeller of equal peripheral speed. High heads possible at speeds of only 1,450 r.p.m. Pump does not lose prime if air or gases enter pump casing.

Motor and pump are separate units, standard construction being cast iron casings, bronze impellers, stainless steel shafts. For liquid temperatures exceeding 230°F, water cooled stuffing boxes and bearings available, enabling pumps to handle temperatures up to 400°F.

New Mopump Has Wide Range of Applications

Compact and close-coupled, the Mopump for general service is of all-ferrous construction. It is of the single entry, single impeller type and fitted with a mechanical seal. Unit construction design makes it possible to open the pump for inspection or maintenance without disconnecting the pipework or lifting the motor. Sizes, 29 in all, range from 1 in. to 5 in. branch size. Manufacturers: **Rhodes, Brydon and Youatt Ltd.**, Reddish Engineering Works, Stockport, Ches.

Chemical Feeder is of Plastics Construction

Already established in America for applications involving chlorinating, defoaming, rust and scale inhibition, wash water detergents, cooling water treatment and slime control, the FP Micro H Chemical Feeder is now offered in the U.K. by **Fischer and Porter Ltd.**, Salterbeck Trading Estate, Workington, Cumberland. It is designed to feed, meter and regulate very low flow rates of a chemical solution continuously into a liquid stream through its built-in ejector. By virtue of its plastics construction the instrument can be used with a very wide range of corrosive fluids.

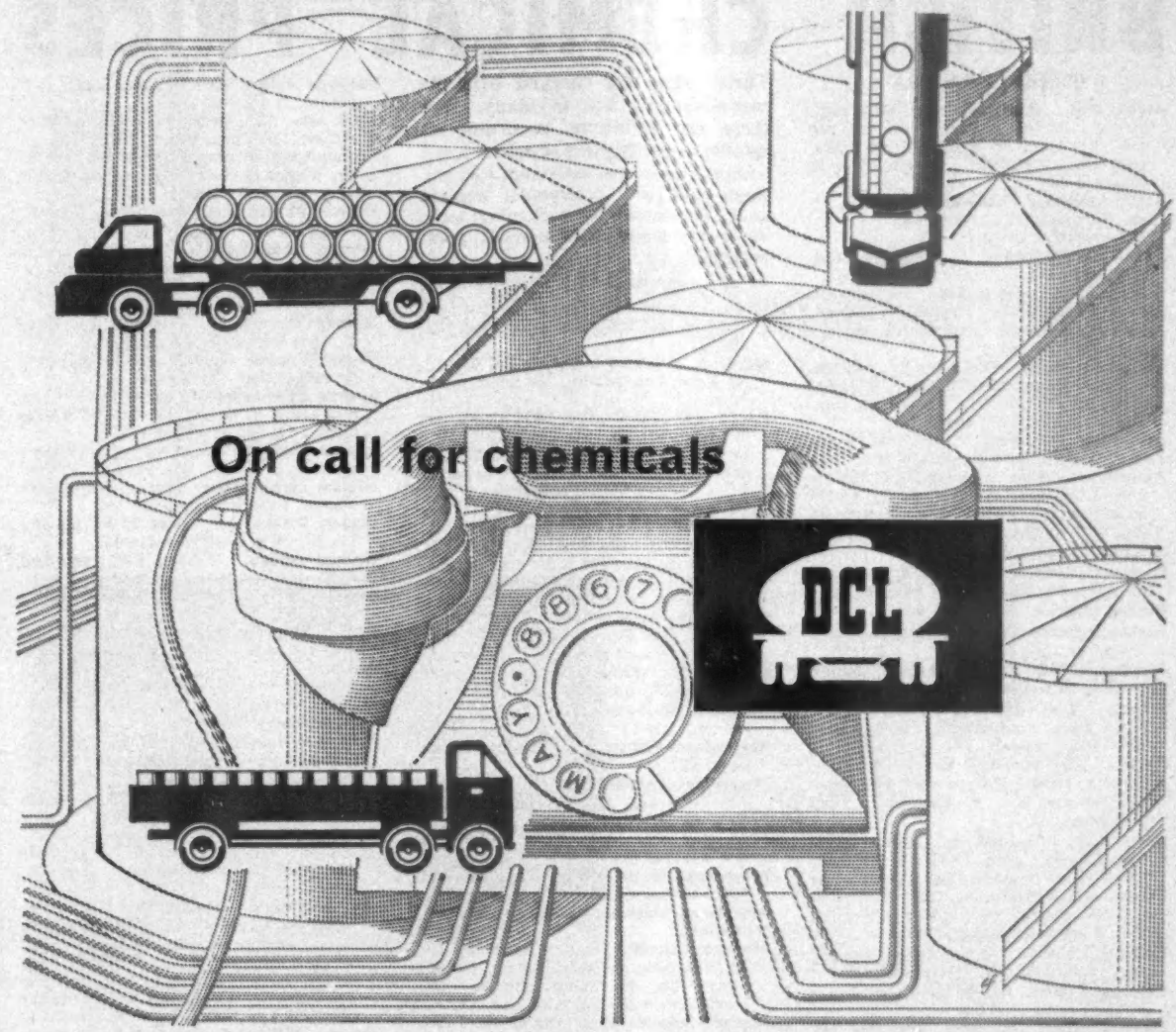
Small-bore Fibreglass Tube in Long Lengths

Small-bore Fibreglass tubing in long lengths is now available, made by a patent continuous process in three sizes: ¼ in., ⅜ in. and ½ in. (i.d.) with a wall thickness of 1/16 in.

For ease of transportation, it is normally supplied in 10-20 ft. lengths. When experimental work is completed—larger sizes will also be available, say the makers, **Fibre-glass Tubes (Isle-of-Man) Ltd.**, Kensington House, Rosemount, Douglas, I.O.M.

Plastics Lining for Bins and Hoppers

Introduction of a new plastics lining for silos, bins and hoppers by **Corrosion Ltd.**, Warsash Road, Warsash, near Southampton, is claimed to overcome a problem in handling, storing and processing powdered and granular materials. Polytile type BL, designed to give a hygienic, washable lining with good resistance to water, chemicals and solvents, and high resistance to abrasion, is easily applied by brush, roller or spray gun. A further advantage claimed where sticky materials are involved is the exceptional release properties.



The service organisation behind the 200,000 ton annual production of DCL Bisol solvents, intermediates and plasticisers is as modern and efficient as the factories producing them. Delivery from a nation-wide network of supply depots is fast and dependable, and the well equipped Technical Services Laboratories are always ready to help customers with their manufacturing problems.

Bisol Bulk chemicals include:—

- ACETIC ACID
- ACETONE
- ACETATE ESTERS
- BUTANOL
- DIACETONE ALCOHOL
- M.E.K.
- PHTHALATES

DCL BISOL

THE DISTILLERS COMPANY LIMITED · CHEMICAL DIVISION

Bisol Sales Office, Devonshire House, Piccadilly, London, W.1

Telephone: MAYfair 8867

TA 5640

BRITISH CHEMICAL PRICES

GENERAL CHEMICALS

Acetic Acid. 10-ton quantities, 80% tech. in bulk, £77 per ton; in casks, £90 per ton; 80% pure in bulk, £83; in casks, £94; glacial, 98/100% in bulk, £93; in drums, £100.

Acetic Anhydride. Ton lots d/d, £128.

Alum. Ground, f.o.r., about £25.
MANCHESTER: Ground, £25.

Aluminium Sulphate. Ex-works, d/d, £15 10s to £18.
MANCHESTER: £16 to £18.

Ammonia, Anhydrous. Per lb., 1s 9d-2s 3d.

Ammonium Chloride. Per ton lot, in non-ret. pack, £33 2s 6d.

Ammonium Nitrate. D/d, 4-ton lots, £37 10s.

Ammonium Persulphate. Per cwt., in 1-cwt. lots, d/d, £6 13s 6d; per ton, in min. 1-ton lots, d/d, £123 10s.

Ammonium Phosphate. MAP., £106 per ton; DAP, £100 10s, per ton, d/d.

Antimony Sulphide. Per lb., d/d UK in min. 1-ton lots; crimson, 5s 8d d/d to 6s 2d; golden, 3s 11d d/d per lb. to 5s 4d d/d.

Arsenic. Ex-store, £45 to £50.

Barium Carbonate. Precip., d/d, 4-ton lots or more, bag packing, £37 10s. per ton.

Barium Chloride. 2-ton lots, £45.

Barium Sulphate [Dry Blanc Fixe]. Precip. 2-ton lots, d/d, £39.

Bleaching Powder. Ret. casks, c.p. station, in 4-ton lots. £30 7s 6d.

Borax. Ton lots, in hessian bags, c.p. Tech. anhydrous, £60 gran., £47 10s; crystal £51; powder, £52; extra fine powder, £53; BP, gran, £56 10s; crystal, £60; powder, £61; extra fine powder, £62. £1 cheaper in 5-ply paper bags.

Boric Acid. Ton lots, in hessian sacks, c.p. Comm., gran., £78 10s; crystal, £87 10s; powder, £85 extra fine powder, £87; BP gran., £91 10s; crystal, £99 10s; powder, £97; extra fine powder, £99. £1 cheaper in paper bags.

Calcium Chloride. Ton lots, in non-ret. pack; solid and flake, about £15.

Chlorine, Liquid. In ret. 16-17 cwt. drums d/d in 3-drum lots, £41.

Chromic Acid. In 1-ton lots, per lb., 2s 2½d.

Chromium Sulphate, Basic. Powder, d/d, 1 ton lots £77.

Citric Acid—Granular. In kegs, 1-4 cwt. lots, per cwt., £9 6s; 5-19 cwt. lots, per cwt., £9 2s; 1-ton lots, per cwt., £9 1s; packed in paper bags, 1-4 cwt. lots, per cwt., £8 19s; 5-19 cwt. lots, per cwt., £8 15s; 1-ton lots, per cwt., £8 14s.

Cobalt Oxide. Black, per lb., d/d, bulk quantities, 13s 2d.

Copper Carbonate. Per lb., 3s 6d.

Copper Sulphate. £78 per ton less 2% f.o.b. Liverpool.

Cream of Tartar. 100%, per cwt., about £11 12s.

Formaldehyde. In casks, d/d, £40.

Formic Acid. 85%, in 4-ton lots, c.p., £91.

Glycerine. Chem. pure, double distilled 1.2627 s.g., per cwt., in 5-cwt. drums for annual purchases of over 5-ton lots and under 25 tons, £11 2s. Refined technical grade industrial, 5s per cwt. less than chem. pure.

Hydrochloric Acid. Spot, per carboy, d/d (according to purity, strength and locality), about 12s.

Hydrofluoric Acid. 60%, per lb., about 1s 2d.

Hydrogen Peroxide. Carboys extra and ret. 27.5% wt., £115; 35% wt., d/d, £138.

These prices are checked with the manufacturers, but in many cases there are variations according to quality, quantity, place of delivery, etc. Abbreviations: d/d, delivered; c.p., carriage paid; ret., returnable; non-ret. pack., non-returnable packaging; tech., technical; comm., commercial; gran., granular.

All prices per ton unless otherwise stated

Iodine. Resublimed BP, under 1 cwt., per lb., 11s 6d; for 1-cwt. lots, per lb., 11s 3d.

Iodoform. Under 1 cwt., per lb., 24s 1d; for 1-cwt. lots, per lb., 23s 5d; crystals, 3s more.

Lactic Acid. Edible, d/d, 50% by wt., per lb., 16¾d; 80% by wt., 26¼d; C.P., 50% by wt., per lb., 14¼d; 80% by wt., 23d; dark tech., ex-works, 44% by wt., per lb. 9d. 1-ton lots, loaned containers.

Lead Acetate. White, about £154.

Lead Nitrate. 1-ton lots, about £135.

Lead, Red. Bases prices: 15-cwt. drum lots, Genuine dry red, £99 5s per ton; orange lead, £111 5s per ton; Ground in oil: red, £121 5s, orange, £133 5s.

Lead, White, Bases prices: in 5-cwt. drums, per ton for 2-ton lots, Dry English £112 5s; Ground in oil, £132 10s.

Lime Acetate. Brown, ton lots, d/d, £40; grey, 80-82%, ton lots, d/d, £45.

Litharge. In 5-cwt. drum lots, £101 5s per ton.

Magnesite. Calcined, in bags, ex-works, about £21.

Magnesium Carbonate. Light, comm., d/d, 2-ton lots, £84 10s under 2 tons, £97.

Magnesium Chloride. Solid (ex-wharf), £19 7s 6d per ton.

Magnesium Oxide. Light, comm., d/d, under 1-ton lots, £245.

Magnesium Sulphate. Crystals, £14 15s, ex-works.

Mercuric Chloride. Tech. powder, per lb., for 1-ton lots, in 28-lb. parcels, 19s 6d; 5-cwt. lots, in 28-lb. parcels, 20s; 1-cwt. lots, in 28-lb. parcels, 20s 3d.

Mercury Sulphide, Red. Per lb. for 5-cwt. lots in 28-lb. parcels, £1 10s 6d; 1-cwt. lots, in 28-lb. parcels, £1 11s.

Nickel Sulphate. D/d, buyers UK, nominal, £170.

Nitric Acid. 80° Tw., £35 2s.

Oxalic Acid. Home manufacture, min. 4-ton lots, in 56 lb. paper bags, c.p., about £125-£130.

Phosphoric Acid. TPA 1,700 ton lots, c.p., £103; BP (s.g. 1,750), ½-ton lots, c.p., per lb., 1s 4d.

Potash, Caustic. Solid, 1-ton lots, £95 10s; liquid, £36 15s.

Potassium Carbonate. Calcined, 96/98%, 1-ton lots, ex-store, about £76.

Potassium Chloride. Industrial, 96%, 1-ton lots, about £24.

Potassium Dichromate. Gran., 1-ton lots, £131 16s. 8d.

Potassium Iodide. BP, under 1 cwt, per lb., 9s 0d., per lb. for 1-cwt. lots, 8s 9d.

Potassium Nitrate. 4-ton lots, in non-ret. pack, c.p., £63 10s.

Potassium Permanganate. BP, 1-cwt. lots, per lb., 2s 0½d; 3-cwt. lots, per lb., 1s 11¾d; 5-cwt. lots, per lb., 1s 11½d; 1-ton lots, per lb., 1s 11d; 5-ton lots, per lb., 1s 10½d. Tech., 1-ton lots in 1-cwt. drums, per cwt., £10 3s; 5-cwt. in 1-cwt. drums, per cwt., £10 5s; 1-cwt. lots, £10 14s.

Salammoniac. Ton lot, in non-ret. pack, £47 10s.

Salicylic Acid. MANCHESTER: Tech., d/d, per lb., 2s 6d, cwt. lots.

Soda Ash. 58% ex-depot or d/d, London station, 1-ton lots, about £16 11s 6d.

Sodium Acetate. Comm. crystals, d/d, £75 8s.

Soda, Caustic. Solid 76/77%; spot, d/d 1-ton lots, £33 16s 6d.

Sodium Bicarbonate. Ton lot, in non-ret. pack, £12 10s.

Sodium Bisulphite. Powder, 60/62%, d/d 2-ton lots for home trade, £46 2s 6d.

Sodium Carbonate Monohydrate. Ton lot, in non-ret. pack, c.p., £64.

Sodium Chlorate. 1-cwt. crums, c.p. station, in 5-ton lots, about £87 per ton.

Sodium Cyanide. 96/98%, ton lot in 1-cwt. drums, £126.

Sodium Dichromate. Gran. Crystals 1-ton lots, £109 13s. 4d., anhydrous, 1-ton lots, £126. All lots delivered d/d.

Sodium Fluoride. D/d, 1-ton lots and over, per cwt., £5; 1-cwt. lots, per cwt., £5 10s.

Sodium Hyposulphite. Pea crystals, £38; comm., 1-ton lots, c.p., £34 15s.

Sodium Iodide. BP, under 56 lb. per lb., 11s 3d; 56 lb. and over, 11s 0d.

Sodium Lactate. Edible, 70%, per ton, £150, d/d free drums, 1-ton lots.

Sodium Metaphosphate. Flaked, paper sacks, £136.

Sodium Metasilicate. (Spot prices) D/d UK in 1-ton lots, 1-cwt. free paper bags, £29.

Sodium Nitrate. Chilean refined gran. over 98%, 6-ton lots, d/d c.p., per ton, £29.

Sodium Nitrite. 4-ton lots, £32.

Sodium Perborate. (10% available oxygen) in 1-cwt. free kegs, 1-ton lots, £129 10s; in 1-cwt. lots, £139 5s.

Sodium Percarbonate. 12½% available oxygen, in 1-cwt. kegs, £170 15s.

Sodium Phosphate. D/d, ton lots: di-sodium, crystalline, £40 10s, anhydrous, £89; tri-sodium, crystalline, £39 10s, anhydrous, £87.

Sodium Silicate. (Spot prices) 75-84° Tw. Lancs and Ches, 6-ton lots, d/d station in loaned drums, £12 10s; Dorset, Somerset and Devon, per ton extra, £3 5s; Scotland and S. Wales, extra, £2 17s 6d. Elsewhere in England, not Cornwall, extra, £1.

Sodium Sulphate [Desiccated Glauber's Salt]. D/d in bags, about £19.

Sodium Sulphate [Glauber's Salt]. D/d, up to £14.

Sodium Sulphate [Salt Cake]. Unground, d/d station in bulk, £10.
MANCHESTER: d/d station, £10 10s.

Sodium Sulphide. 60/62%, spot, d/d, in drums in 1-ton lots, solid, £38 2s 6d; broken, £39 2s 6d. Flakes, £40 12s 6d, crystals, £29 10s.

Sodium Sulphite. Anhydrous, £71 10s; comm., d/d station in bags, £27-£28 10s.

Sulphur. 4 tons or more, ground, according to fineness, £20-£22.

Sulphuric Acid. Net, naked at works, 168° Tw. according to quality, £11 10s—£12 10s per ton; 140° Tw., arsenic free, £9; 140° Tw., arsenious, £8.

Tartaric Acid—Powder and Granular. Per cwt.: 10 cwt. or more, in kegs, 294s; in bags, 286s per cwt.

Titanium Oxide. Standard grade comm., rutile structure, £178; standard grade comm., anatase structure, £163.

Zinc Oxide. Per ton: white seal, £95, green seal, £93; red seal, £90.

SOLVENTS AND PLASTICISERS

Acetone. All d/d. In 5-gal. drums, £124; in 10-gal. drums, £114; in 40-45 gal. drums, under 1 ton, £89; 1-5 tons, £84;

5-10 tons, £82; 10 tons and up, £80; in 500-gal. tank wagons, £79. In bulk minimum 2,500 gal. £75 per ton.

Butyl Acetate BSS. 10-ton lots, £165.

***n*-Butyl Alcohol BSS.** 10 tons, in drums, d/d, £137 10s.

***sec*-Butyl Alcohol.** All d/d. In 5-gal. drums, £168; in 10-gal. drums, £158 in 40-45 gal. drums, under 1 ton, £133; 1-5 tons, £130; 5-10 tons, £129; 10 tons and up, £128; in 400-gal. tank wagons, £125.

***tert*-Butyl Alcohol.** 5-gal. drums, £195 10s; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £174 10s; 5-10 tons, £173 10s; 10 tons and up, £172 10s.

Diacetone Alcohol. Small lots: 5-gal. drums, £185; 10-gal. drums, £175. 40/45-gal. drums: under 1 ton, £148; 1-5 tons, £147; 5-10 tons, £146; 10 tons and over, £145, in 400-gal. tank wagons, £142.

Dibutyl Phthalate. In drums, 10 tons, d/d per ton, £216; 45-gal. 1-4 drums, £222.

Diethyl Phthalate. In drums, 10 tons, per ton, £201; 45-gal. 1-4 drums, £207.

Dimethyl Phthalate. In drums, 10 tons, per ton, d/d, £194; 45-gal. 1-4 drums, £200.

Dioctyl Phthalate. In drums, 10 tons, d/d, per ton, £287; 45-gal. 1-4 drums, £293.

Ether BSS. 1-ton lots, drums extra, per lb., 1s 11d.

Ethyl Acetate. 10-ton lots, d/d, £137.

Ethyl Alcohol Fermentation grade (PBF 66 o.p.). Over 300,000 p. gal., 3s 10½d; d/d in tankers, 2,500-10,000 p. gal. per p. gal., 4s 0¾d. D/d in 40/45-gal. drums, p.p.g. extra, 2d.
Absolute alcohol (74.5 o.p.), p.p.g. extra, 2d.

Methanol. Pure synthetic, d/d, £46.

Methylated Spirit. Industrial 66° o.p.: 500-gal. and up, d/d in tankers, per gal., 5s 7½d; 100-499 gal. in drums, d/d per gal., 6s 0½d-6s 2½d. Pyridinised 66° o.p.: 500 gal. and up, in tankers, d/d, per gal., 5s 11d; 100-499 gal. in drums, d/d, per gal., 6s 4d-6s 6d.

Methyl Ethyl Ketone. All d/d. in 40/45-gal. drums, under 1 ton, £143 10s; 1-5 tons, £138 10s; 5-10 tons, £136 10s; 10 tons and up, £143; in 400-gal. tank wagons, £134 10s.

Methyl *iso*Butyl Carbinol. All d/d. In 5-gal. drums, £203; in 10-gal. drums, £193; 40-45 gal. drums, less than 1 ton, £168; 1-9 tons, £165; 10 tons and over, £163; in 400-gal. tank wagons, £160.

Methyl *iso*Butyl Ketone. All d/d. In 5-gal. drums, £209; in 10-gal. drums, £199; in 40/45-gal. drums, under 1 ton, £174; 1-5 tons, £171; 5-10 tons, £170; 10 tons and up, £169; in 400-gal. tank wagons, £166.

***so*Propyl Acetate.** 10 tons, d/d, 45-gal. drums £132.

***iso*Propyl Alcohol.** Small lots: 5-gal. drums. £118; 10-gal. drums, £108; 40/45-gal. drums: less than 1 ton, £83; 1-9 tons, £81; 10-50 tons, £80 10s; 50 tons and up, £80.

RUBBER CHEMICALS

Carbon Disulphide. According to quality, £61-£67.

Carbon Black. GPF: Ex-store, Swansea. Min. 3-ton lots, one delivery, 6¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 7d per lb.; ex-store, Manchester, London and Glasgow, 7¾d per lb. HAF: ex-store, Swansea; Min. 3-ton lots, one delivery, 7¾d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 8d per lb. Ex-store Manchester, London and Glasgow, 8¾d per lb ISAF: Ex-store Swansea, min. 3-ton lots in one delivery, 9¾d per lb., min. 1-ton lots and up to 3-tons in one delivery, 10d per lb. Ex-store Manchester, London and Glasgow, 10¾d per lb.

Carbon Tetrachloride. Ton lots, £83 15s.

India-Rubber Substitutes. White, per lb. 1s 4½d to 1s 7d; dark, d/d, per lb., 1s 0½d to 1s 4d.

Lithopone. 30%, about £57 10s for 5-ton lots.

Mineral Black. £7 10s-£10.

Sulphur Chloride. British, about £50.

Vegetable Lamp Black. 2-ton lots, £64 8s.

Vermilion. Pale or deep, 7-lb. lots, per lb., 15s 6d.

COAL TAR PRODUCTS

Benzole. Per gal., min. 200 gal., d/d in bulk, 90's, 5s 3d; pure, 5s 7d.

Carbolic Acid. Crystals, d/d bulk, per lb. 1s 2½d; 40/50-gal. ret. drums extra, per lb., ¼d.

Creosote. Home trade, per gal., according to quality, f.o.r. maker's works, 1s-1s 9d.
MANCHESTER: Per gal., 1s 3d-1s 8d.

Cresylic Acid. Pale 99/100%, per gal., 7s 9d D/d UK in bulk: Pale ADF, per imperial gallon f.o.b. UK, 8s; per US gallon, c.i.f. NY, 103.50 cents freight equalised.

Naphtha. Solvent, 90/160°, per gal., 5s heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s. Drums extra ; higher prices for smaller lots.

Naphthalene. Crude, 4-ton lots, in buyers' bags, nominal, according to m.p.: £22-£30; hot pressed, bulk, ex-works, £40; refined crystals, d/d min. 4-ton lots, £65-£68.

Pitch. Medium soft, home trade, f.o.r. suppliers' works, £10 10s; export trade, f.o.b. suppliers' port, about £12.

Pyridine. 90/160, per gal., 20s about.

Toluol. Pure, per gal., 5s ; 90's 2,000 gal. in bulk, per gal., 4s 9d.
MANCHESTER: Pure, naked, per gal., 5s 6d.

Xylole. According to grade, in 1,000-gal. lots, d/d London area in bulk, per gal., 5s 4d-5s 6d.

INTERMEDIATES AND DYES
(Prices Normal)

***m*-Cresol 98/100%.** 10 cwt. lots d/d, per lb., 4s 9d.

***o*-Cresol 30/31°C.** D/d, per lb., 1s.

***p*-Cresol 34/35°C.** 10 cwt. lots d/d, per lb., 5s.

Dichloraniline. Per lb., 4s 6d.

Dinitrobenzene. 88/99°C., per lb., 2s 1d.

Dinitrotoluene. Drums extra. SP 15°C., per lb., 2s 1½d; SP 26°C., per lb., 1s 5d; SP 33°C., per lb., 1s 2½d; SP 66/68°C., per lb., 2s 1d.

***p*-Nitraniline.** Per lb., 5s 1d.

Nitrobenzene. Spot, 90 gal. drums (drums extra), 1-ton lots, d/d, per lb., 10d.

Nitronaphthalene. Per lb., 2s 5¾d.

***o*-Toluidine.** 8-10 cwt. drums (drums extra), per lb., 1s 11d.

***p*-Toluidine.** In casks, per lb., 6s 1d.

Dimethylaniline. Drums extra, c.p., per lb. 3s 2d.

Polymer Symposium Papers

In September 1960 the Society of Chemical Industry through its Plastics and Polymer Group organised a symposium on 'High temperature resistance and thermal degradation of polymers' at which 28 papers were read and discussed. These papers have now been published, with the discussion, as the Society's Monograph No. 13. Copies are available from the Publications Department, Society of Chemical Industry, 14 Belgrave Square, London S.W.1, at the price of £3. Members of the Society, £2 5s.

TRADE NOTES

Laporte Textile Exhibition

Laporte Chemicals Ltd. are holding an exhibition of bleaching techniques at the Black Boy Hotel, Nottingham, 3-5 October. The exhibition will illustrate the applications of the Laporte range of bleaching chemicals and will feature the types of equipment available today for bleaching natural and synthetic materials.

A lecture, 'The role of hydrogen peroxide, peracotic acid and sodium chlorite in bleaching,' will be given at the hotel on 5 October, at 7 p.m., by Mr. L. Chesner, Laporte Chemicals' research staff, to the Midlands Section of the Society of Dyers and Colourists.

Glass Fibre Piping

Tredigan Ltd., glass fibre piping manufacturers, are to locate their production in a new factory at Cumbernauld new town. They will continue the work done originally at Greenock by James Mitchell and Sons (Greenock) Ltd., later continued in an experimental plant in Wales. The laminated glass fibre piping will be used for a wide range of purposes and special attention will be given to the manufacture of special duty non-standard units.

Braided Hose

British Moulded Hose Co. Ltd., a subsidiary of BTR Industries Ltd., Herga House, Vincent Square, London S.W.1, have resumed full production of long length moulded and braided hose at their Watford factory after the fire on 21 June. Production is at an even higher level of activity and much earlier than anticipated.

Infra Red Ovens

Available from Parkinson Cowan Industrial Products, Dolphin Works, Fitzalan Street, London S.E.11, is an 8-page illustrated colour brochure that gives full details of lighting, operating and temperature settings for Parkinson Cowan gas-fired radiant heat panel ovens.

Berk Bulk Deliveries

First of a series of booklets entitled 'Bulk deliveries by Berk' has been published by F. W. Berk and Co. Ltd., Stratford, London E.15. It deals with hydrochloric acid and certain metal chloride solutions. It has been prepared by the company's technical advice service to give information and help to any of their customers who may be considering the installation of bulk storage facilities for these chemicals.

Detailed advice is given on the design, positioning and maintenance of storage tanks, on the materials recommended for use, and on the ancillary equipment necessary for safe and trouble-free operation. Delivery procedures, safety precautions, and the prevention of atmospheric contamination, are discussed in full.

Change of Address

From 2 October the address of Aluminium (Canada) will be Berkeley Square, W.1. Tel.: Mayfair 9721.

NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

ACCEPTANCES

Open to public inspection 1 November

Metallo-ceramic compositions. Ruskin, S. L. **881 184**

Process for treating lower alkanes by irradiation. Ruskin, S. L. **881 491**

Polymerisation of unsaturated aliphatic compounds. Dunlop Rubber Co. Ltd. **880 998**

Production of resin-impregnated fibrous material. Rubber Improvement Ltd. **881 195**

Fertilisers. Szepesi, K., Jancso, T., Varga, E., and Vargo, T. **881 517**

Process and apparatus for refining crude benzene. Koppers GmbH., Heinrich. **881 519**

Purification of silicon halides and the preparation of hyperpure silicon. Du Pont de Nemours & Co., E. I. **881 107**

Dithiatetrahydro-isoindolenines. Farbenfabriken Bayer AG. **881 408**

Dithiacyclohexenes. Farbenfabriken Bayer AG. **881 409**

Process for the manufacture of dyestuffs of the tetrazaporphin series. Farbenfabriken Bayer AG. **881 410**

Coating compositions. Pittsburgh Plate Glass Co. [Addition to 826 653.] **881 498**

Arylsulphonyl acrylonitriles and compositions containing same. Monsanto Chemical Co. **881 332**

Tetrahydrofurane derivatives. Geigy AG., J. R. **881 520**

Manufacture of organic halogen compounds. Imperial Chemical Industries Ltd. **881 003**

Process for the polymerisation of vinylidene monomers. Monsanto Chemical Co. **881 524**

Production of alkali metal tripolyphosphates. Monsanto Chemical Co. **881 286**

Water resistant adhesive comprising a gelatinised starch and process for preparing same. Corn Products Co. **881 371**

Polymerisation catalysts and their use in its preparation of olefin polymers. Montecatini. **881 004**

Quaternary ammonium compounds and their preparation. Wellcome Foundation Ltd. **881 265**

Rubber latex. Copolymer Rubber & Chemical Corp. **881 362**

Manufacture of carbon black. Columbian Carbon Co. **881 185**

Dibenzazepino derivatives. Rhone-Poulenc. **881398**

Preparation of steroid compounds. Merck & Co. Inc. **881 372**

Steroids and the manufacture thereof. Upjohn Co. **881 261**

Apparatus for testing chemical compounds. Ankh Laboratories Inc. **881 046**

Dye-receptive graft copolymers, method for preparing same and shaped articles fabricated therefrom. Dow Chemical Co. **881 374**

Homogeneous polyamide plates. Badische Anilin- & Soda-Fabrik AG. **881 273**

Insecticide formulation. Shell Internationale Research Maatschappij N.V. **881 411**

Ion-exchange processes and plants. Permutit Co. Ltd. **881 015**

Preparation of nitrofuran compounds. Norwich Pharmacal Co. **881 375**

Herbicidal road oil compositions. Esso Research & Engineering Co. **881 412**

Halogenated amine boranes. Imperial Chemical Industries Ltd. **881 376**

Oral pharmaceutical preparations containing 6-chloro-7-sulphamyl-3:4-dihydro-1:2:4-benzothiadiazine-1:1-dioxide. Ciba Ltd. **881 377**

Phenothiazine compounds, their production, and pharmaceutical compositions containing them. Recip A. B. **881 379**

Silicon compounds. Imperial Chemical Industries Ltd. **881 178**

Process of refining crude naphthalene. American Cyanamid Co. **881 293**

Production of amides and lactams. British Petroleum Co. Ltd. **881 276**

Substituted pregnenes. American Cyanamid Co. **881 501**

Process for the manufacture of active silicic acid from a high per cent silicate slag. Knapsack-Griesheim AG. **881 414**

Method of producing an aqueous solution of high concentration of polyvinyl alcohol. Kurashiki Rayon Kabushiki Kaisha. **881 073**

Coating compositions. Union Carbide Corp. **881 417**

Organosilicon hydrides. Imperial Chemical Industries Ltd. **881 179**

Triazinylamino stilbene compounds. Imperial Chemical Industries Ltd. **881 295**

Method of preparing boron compounds. Continental Oil Co. **881 502**

Treatment of chlorine-containing polymers. Solvic S.A. **881 503**

Compounds of kanamycin and tetracycline type antibiotic. Bristol-Myers Co. **880 992**

Sulphonyl-3:4-dihydropyrido[2,3-e]-1:2:4-thiadiazine-1:1-dioxides. Ciba Ltd. **881 506**

Treatment of petroleum and petroleum products by irradiation. Ruskin, D., Reder, M., and Farhi, C. [Divided out of 881 491.] **881 492**

Production of porous plastics on the basis of polyepoxy compounds. Badische Anilin- & Soda-Fabrik AG. **881 257**

Iodine-containing benzoic acid amides and a method of producing same. Osterreichische Stickstoffwerke AG. **881 510**

Steroid compounds, preparation thereof and compositions thereof. Pfizer & Co. Inc., Chas. **881 334**

Process of producing cyclohexylamine. Abbott Laboratories. **881 512**

Vulcanisable organopolysiloxane compositions. Rhone-Poulenc. **880 994**

Underwater coatings resistant to growth. Bayer. [Addition to 834 875.] **881 481**

Process for production of cyanuric chloride. Tokime, M., and Kimura, N. **881 420**

Method of compounding cis-polybutadiene for mill handling and product thereof. Phillips Petroleum Co. **881 482**

Oxidation catalysts and their use in the oxidation of olefins. Union Chimique Belge S.A. **881 335**

Hydrazinium compounds, their production and pharmaceutical compositions containing them. Grace & Co., W. R. **881 337**

Process for the production of alkali metal alkane sulphinates. Bayer. **881 484**

Purification of phthalic acids. Chemstrand Corp. **881 460**

Hardenable polysulphide mixtures. Metallgesellschaft AG. **881 486**

Preparation of hydrazines. Olin Mathieson Chemical Corp. **881 339**

Hydrazine derivatives and a process for the manufacture thereof. Hoffmann-La Roche & Co., F. **881 340**

Isomerisation process. Hoffmann-La Roche & Co. AG, F. **881 488**

Acrylonitrile fibres and their preparation. Du Pont de Nemours & Co., E. I. **881 211**

Catalytic polymerisation of ethylenicaly unsaturated hydrocarbons and the preparation of catalysts therefor. Shell Internationale Research Maatschippij N.V. **881 119, 881 212**

Dihydro-furane derivatives. Geigy AG., J. R. [Divided out of 881 520.] **881 521**

Method of producing an aqueous solution of high concentration of polyvinyl alcohol. Kurashiki Rayon Kabushiki Kaisha. [Divided out of 881 073.] **881 074**

Polystyrene Containers for Drugs and Cosmetics

AVAILABLE from the Plastics Group of the Metal Box Company Ltd., 37 Baker Street, London W.1, are two series of polystyrene containers for foodstuffs, pharmaceuticals and cosmetics. There are 11 pots in each of the two ranges; in the squat series the capacities range from 1¼ to 12 fluid oz. and in the tall range from 2 to 20 fluid oz.

Any of the containers can be supplied in crystal or coloured polystyrene with appropriate wall thickness, and polythene snap-on caps are available.

Specially designed to handle these Polypots is Metal Box's No. 2 filler and capper. The machine may be rented with full Metal Box services.

The containers were displayed at the Packaging Exhibition at Olympia.

Q and Q Success at Moscow Exhibitions

Quickfit and Quartz have met with considerable success in exhibitions in Moscow this year. At the recent fifth International Congress of Biochemistry, the firm sold all the items on their stand, valued at £3,300 including one of their new steady state distribution machines. At the close of the Congress the Russians placed an order for Quickfit laboratory apparatus including 30 BU assemblage and reaction vessels.

At the British Trade Fair in Moscow earlier in the year Quickfit and Quartz sold the whole of their display.

U.K. Trade Delegation for Czechoslovakia

A U.K. trade delegation has left for Czechoslovakia for informal talks on the promotion of mutual trade. Among the members of the six-man delegation, which has the full support of the Board of Trade, is Mr. Cooper of Shell International Petroleum. The object of the visit is to explore the potentialities for future expansion of trade.

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PATENTS & TRADE MARKS

KINGS PATENT AGENCY, LTD. (B. T. King, A.I.Mech.E., Patent Agent), 146a Queen Victoria Street, London, E.C.4. City 6161. Booklet on request.

The Proprietors of British Patent No. 796,327 for "RECOVERING SYNTHETIC PHENOL AND OTHER COMPONENTS OF CUMENE HYDROPEROXIDE CLEAVAGE MIXTURE BY DISTILLATION," desire to enter into negotiations with a firm or firms for the sale of the patent or for the grant of licences thereunder. Further particulars may be obtained from Marks & Clerk, 57 & 58 Lincoln's Inn Fields, London, W.C.2.

The proprietors of British Patents Nos. 795,131 and 796,901 entitled respectively "Primary alcohols" and "Preparation of 1-(p-nitrophenyl)-2-acylamido-propane-1,3-diols" offer the same for license or otherwise to ensure practical working in Great Britain. Enquiries to Frank B. Dehn & Co., Imperial House, 15-19 Kingsway, London, W.C.2.

The proprietors of British Patents Nos. 795,130 and 795,132 entitled respectively "Metal borohydrides" and "New borohydride-containing compositions" offer the same for license or otherwise to ensure practical working in Great Britain. Enquiries to Frank B. Dehn & Co., Imperial House, 15-19 Kingsway, London, W.C.2.

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